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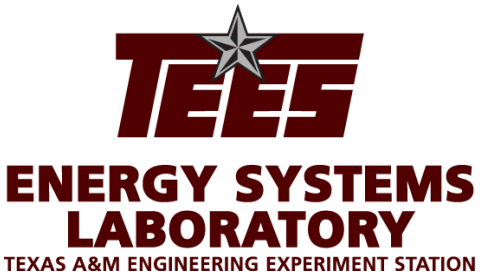

TAMU Project

Energy Consumption Data Quality Assurance/Quality Control Assessment Report for the

Month of October 2016

Prepared for

Utility & Energy Services

Division of Administration

Texas A&M University

November 2016

Acknowledgements

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Executive Summary

This report analyzes the energy use data collected from 582 meters in 202 buildings and complexes (approximately 20,485,000 GSF) on the campus of Texas A&M University in College Station, Texas. The report consists of five sections: 1) The summary of the monthly energy consumption per meter ID, 2) The quality control and assurance analysis of incorrect or incomplete energy use patterns, 3) Energy consumption time series plots, 4) Energy Balance plots, and 5) Energy Balance plots with filled-in consumption data. Section one contains the summary of monthly energy consumption for each of the TAMU buildings. Section two includes the reviews on each of those building energy use patterns that presented problems in the metered data. Section three and four are a collection of the plots generated for the energy use analysis, as reference to indicate and validate the quality of the metered energy data. The Section five includes the energy balance plots with filled-in energy data.

Table of Contents

Page

List of Tables

Page

List of Figures

Page

I. Summary of Monthly Consumption

Table I-1 October 2016 Monthly Consumption for TAMU Buildings

TAMU#	Building Name	Area (ft^2)	MeterID	Type	Monthly Consumption	Units	Comments
0270	Emerging Technologies Building	305,316	007469	ELE	202,711	kWh	
0270	Emerging Technologies Building	305,316	007470	ELE	52,828	kWh	
0270	Emerging Technologies Building	305,316	007471	CHW	2,402,024	mBtu	
0270	Emerging Technologies Building	305,316	007475	HHW	215,089	mBtu	
0275	Liberal Arts and Arts & Humanities Building	107,500	007715	ELE	57,289	kWh	
0275	Liberal Arts and Arts & Humanities Building	107,500	007716	CHW	492,737	mBtu	
0275	Liberal Arts and Arts & Humanities Building	107,500	007717	HHW	51,890	mBtu	
0290	Wells Residence Hall	67,283	006870	ELE	51,322	kWh	
0290	Wells Residence Hall	67,283	001984	CHW	925,976	mBtu	(2)
0290	Wells Residence Hall	67,283	001988	HHW	477,246	mBtu	(2)
0291	Rudder Residence Hall	67,283	000351	ELE	56,859	kWh	
0291	Rudder Residence Hall	67,283	002132	CHW	813,832	mBtu	(1), (2)
0291	Rudder Residence Hall	67,283	002136	HHW	329,419	mBtu	(1), (2)
0292	Eppright Residence Hall	67,283	000002	ELE	49,963	kWh	
0292	Eppright Residence Hall	67,283	002262	CHW	504,556	mBtu	
0292	Eppright Residence Hall	67,283	002266	HHW	185,878	mBtu	(1)
0293	Appelt Residence Hall	82,767	000003	ELE	64,594	kWh	
0293	Appelt Residence Hall	82,767	002062	CHW	899,791	mBtu	(2)
0293	Appelt Residence Hall	82,767	002066	HHW	355,689	mBtu	(2)
0294	Lechner Residence Hall	59,541	000004	ELE	52,174	kWh	
0294	Lechner Residence Hall	59,541	002285	CHW	695,128	mBtu	
0294	Lechner Residence Hall	59,541	002289	HHW	462,172	mBtu	
0296-0297	Mitchell Inst. For Fundamental Phys & Astronomy	189,617	006536	ELE	112,867	kWh	
0296-0297	Mitchell Inst. For Fundamental Phys & Astronomy	189,617	006537	ELE	107,864	kWh	
0296-0297	Mitchell Inst. For Fundamental Phys & Astronomy	189,617	006534	CHW	1,122,029	mBtu	
0296-0297	Mitchell Inst. For Fundamental Phys & Astronomy	189,617	006535	HHW	200,123	mBtu	
0353	Bright Aerospace Building	148,837	001569	ELE	170,226	kWh	
0353	Bright Aerospace Building	148,837	002746	CHW	1,528,467	mBtu	(2)
0353	Bright Aerospace Building	148,837	002757	HHW	62,963	mBtu	
0358	Davis Football Player Development Center	20,026	007699	ELE	27,853	kWh	
0358	Davis Football Player Development Center	20,026	007701	CHW	198,358	mBtu	
0358	Davis Football Player Development Center	20,026	007702	HHW	2,508	mBtu	
0361	Bright Football Complex	124,971	008461	ELE	217,960	kWh	
0361	Bright Football Complex	124,971	002547	CHW	1,456,756	mBtu	
0361	Bright Football Complex	124,971	002551	HHW	217,212	mBtu	
0367	Kyle Field	489,000	000336	ELE	188,012	kWh	
0367	Kyle Field	489,000	008861	ELE	108,945	kWh	
0367	Kyle Field	489,000	008862	ELE	139,133	kWh	
0367	Kyle Field	489,000	008863	ELE	217,613	kWh	
0367	Kyle Field	489,000	008864	ELE	200,182	kWh	
0367	Kyle Field	489,000	008865	ELE	94,765	kWh	
0367	Kyle Field	489,000	008866	ELE	152,922	kWh	
0367	Kyle Field	489,000	008867	ELE	198,628	kWh	
0367	Kyle Field	489,000	008868	ELE	105,200	kWh	
0367	Kyle Field	489,000	008852	CHW	3,447,476	mBtu	
0367	Kyle Field	489,000	008026	CHW	3,566,768	mBtu	
0367	Kyle Field	489,000	008856	HHW	90,853	mBtu	
0367	Kyle Field	489,000	008027	HHW	1,117,933	mBtu	
0376	Chemistry Building Addition	115,797	006229	ELE	178,219	kWh	
0376	Chemistry Building Addition	115,797	006230	ELE	123,198	kWh	
0376	Chemistry Building Addition	115,797	007115	CHW	3,206,186	mBtu	
0376	Chemistry Building Addition	115,797	007119	HHW	939,825	mBtu	#, (1)
0383	Koldus Building	110,272	001488	ELE	168,019	kWh	
0383	Koldus Building	110,272	002863	CHW	777,985	mBtu	(2)
0383	Koldus Building	110,272	002874	HHW	145,772	mBtu	(2)
0384	Sanders Corps of Cadets Center	19,363	001554	ELE	25,068	kWh	
0384	Sanders Corps of Cadets Center	19,363	002583	CHW	194,174	mBtu	
0384	Sanders Corps of Cadets Center	19,363	002587	HHW	71,738	mBtu	
0325-0385	CE TTI Office & Lab Building	157,844	009122	ELE	167,213	kWh	
0325-0385	CE TTI Office & Lab Building	157,844	009123	CHW	1,195,348	mBtu	
0325-0385	CE TTI Office & Lab Building	157,844	009124	HHW	150,597	mBtu	
0386	Jack E. Brown Chemical Engineering Building	205,000	001428	ELE	166,320	kWh	
0386	Jack E. Brown Chemical Engineering Building	205,000	001429	ELE	347,328	kWh	
0386	Jack E. Brown Chemical Engineering Building	205,000	002250	CHW	3,843,944	mBtu	
0386	Jack E. Brown Chemical Engineering Building	205,000	006871	CHW	108,996	mBtu	
0386	Jack E. Brown Chemical Engineering Building	205,000	002254	HHW	440,331	mBtu	

Table I-1 October 2016 Monthly Consumption for TAMU Buildings (*Continued*)

TAMU#	Building Name	Area (ft^2)	MeterID	Type	Monthly Consumption	Units	Comments
0387	Richardson Petroleum Engineering Building	113,700	005870	ELE	87,451	kWh	
0387	Richardson Petroleum Engineering Building	113,700	005872	ELE	108,618	kWh	
0387	Richardson Petroleum Engineering Building	113,700	005805	CHW	1,207,807	mBtu	
0387	Richardson Petroleum Engineering Building	113,700	005809	HHW	54,972	mBtu	(2)
0391-0392	James J. Cain'51 and Mechanical Engineering Office Building	173,481	001573	ELE	202,152	kWh	
0391-0392	James J. Cain'51 and Mechanical Engineering Office Building	173,481	002906	CHW	1,480,037	mBtu	
0391-0392	James J. Cain'51 and Mechanical Engineering Office Building	173,481	002910	HHW	204,127	mBtu	
0394	Underwood Residence Hall	81,730	000014	ELE	62,832	kWh	
0394	Underwood Residence Hall	81,730	002117	CHW	641,326	mBtu	
0394	Underwood Residence Hall	81,730	002121	HHW	232,484	mBtu	
0398	Langford Architecture Center Building A	116,619	003806	ELE	111,951	kWh	
0398	Langford Architecture Center Building A	116,619	003951	CHW	1,149,151	mBtu	
0398	Langford Architecture Center Building A	116,619	003955	HHW	472,680	mBtu	
0400-0402-1405	Spence Hall, Briggs Hall, and Ash II LLC	108,555	009386	ELE	93,951	kWh	
0400	Spence Hall Dorm 1	38,907	009290	ELE	14,693	kWh	
0400	Spence Hall Dorm 1	38,907	009291	ELE	18,122	kWh	
0400-1405	Spence Hall and Ash II LLC	72,038	009292	CHW	631,695	mBtu	
0400-1405	Spence Hall and Ash II LLC	72,038	009296	HHW	145,015	mBtu	
1405	Ash II LLC	33,131	009387	CHW	290,948	mBtu	
1405	Ash II LLC	33,131	009391	HHW	75,500	mBtu	
0402	Briggs Hall Dorm 3	36,517	009322	ELE	17,304	kWh	
0402	Briggs Hall Dorm 3	36,517	009323	ELE	13,467	kWh	
0402	Briggs Hall Dorm 3	36,517	009324	CHW	361,562	mBtu	
0402	Briggs Hall Dorm 3	36,517	009328	HHW	59,940	mBtu	
0401-0403-1404	Kiest Hall, Fountain Hall, and Plank LLC	108,752	009370	ELE	91,863	kWh	
0401	Kiest Hall Dorm 2	38,815	009306	ELE	14,526	kWh	
0401	Kiest Hall Dorm 2	38,815	009307	ELE	15,079	kWh	
0401-1404	Kiest Hall, and Plank LLC	72,052	009308	CHW	691,020	mBtu	
0401-1404	Kiest Hall, and Plank LLC	72,052	009312	HHW	175,575	mBtu	
1404	Plank LLC	33,237	009372	CHW	352,555	mBtu	*
1404	Plank LLC	33,237	009376	HHW	102,876	mBtu	*
0403	Fountain Hall Dorm 4	36,700	009338	ELE	15,999	kWh	*
0403	Fountain Hall Dorm 4	36,700	009339	ELE	13,268	kWh	
0403	Fountain Hall Dorm 4	36,700	009340	CHW	328,092	mBtu	
0403	Fountain Hall Dorm 5	36,700	009344	HHW	59,017	mBtu	
0404-0406-1403	Gainer Hall, Leonard Hall and Ash LLC	90,072	009401	ELE	75,307	kWh	
0406-1403	Leonard Hall - Dorm 7 and Ash LLC	53,508	007982	CHW	547,309	mBtu	
0406-1403	Leonard Hall - Dorm 7 and Ash LLC	53,508	007983	HHW	72,442	mBtu	
0406	Leonard Hall - Dorm 7	36,222	008011	ELE	13,076	kWh	
0406	Leonard Hall - Dorm 7	36,222	008012	ELE	15,249	kWh	
1403	H. Grady Ash, Jr. '58 Leadership Learning Center	17,286	008005	CHW	190,029	mBtu	
1403	H. Grady Ash, Jr. '58 Leadership Learning Center	17,286	008006	HHW	5,907	mBtu	
0404	Gainer Hall Dorm 5	36,564	009354	ELE	13,495	kWh	
0404	Gainer Hall Dorm 5	36,564	009355	ELE	12,610	kWh	
0404	Gainer Hall Dorm 5	36,564	009356	CHW	356,978	mBtu	
0404	Gainer Hall Dorm 5	36,564	009360	HHW	54,752	mBtu	
0405-0407-1402	Lacy Hall - Dorm 6, Harrell Hall and Leadership Learning Center	91,310	007721	ELE	79,019	kWh	
0407-1402	Harrell Hall - Dorm 8 and Buzbee LLC	54,443	007722	CHW	544,454	mBtu	
0407-1402	Harrell Hall - Dorm 8 and Buzbee LLC	54,443	007723	HHW	62,831	mBtu	
0405	Lacy Hall - Dorm 6	36,867	007922	ELE	29,141	kWh	
0405	Lacy Hall - Dorm 6	36,867	007918	CHW	372,495	mBtu	
0405	Lacy Hall - Dorm 6	36,867	007919	HHW	92,111	mBtu	
0407	Harrell Hall - Dorm 8	36,943	007729	ELE	29,998	kWh	
1402	Buzbee Leadership Learning Center	17,500	007725	CHW	173,182	mBtu	(1)
1402	Buzbee Leadership Learning Center	17,500	007726	HHW	10,890	mBtu	
0412	Moses Residence Hall	40,828	000027	ELE	36,497	kWh	
0412	Moses Residence Hall	40,828	002384	CHW	645,835	mBtu	
0412	Moses Residence Hall	40,828	002395	HHW	205,878	mBtu	
0415	Davis-Gary Residence Hall	40,828	000030	ELE	30,964	kWh	
0415	Davis-Gary Residence Hall	40,828	002532	CHW	534,074	mBtu	
0415	Davis-Gary Residence Hall	40,828	002543	HHW	156,806	mBtu	
0419	Legett Residence Hall	45,134	000031	ELE	19,073	kWh	(2)
0419	Legett Residence Hall	45,134	002218	CHW	348,106	mBtu	(2)
0419	Legett Residence Hall	45,134	002222	HHW	77,878	mBtu	(2)
0420	Milner Hall	48,268	009144	ELE	25,518	kWh	
0420	Milner Hall	48,268	009145	CHW	234,764	mBtu	
0420	Milner Hall	48,268	009146	HHW	46,293	mBtu	

Table I-1 October 2016 Monthly Consumption for TAMU Buildings (*Continued*)

TAMU#	Building Name	Area (ft^2)	MeterID	Type	Monthly Consumption	Units	Comments
0422	Walton Residence Hall	51,494	000378	ELE	84,375	kWh	
0422	Walton Residence Hall	51,494	002364	HHW	39,807	mBtu	
0424	Hotard Hall	18,500	000032	ELE	16,374	kWh	
0424	Hotard Hall	18,500	002657	CHW	143,076	mBtu	
0424	Hotard Hall	18,500	002668	HHW	39,477	mBtu	
0425	Henderson Hall	22,185	001553	ELE	15,781	kWh	
0425	Henderson Hall	22,185	002607	CHW	225,228	mBtu	
0425	Henderson Hall	22,185	002611	HHW	72,044	mBtu	
0426-0427-0428	FHK Complex	154,349	000331	ELE	124,374	kWh	
0426-0427-0428	FHK Complex	154,349	002848	CHW	1,264,493	mBtu	
0426-0427-0428	FHK Complex	154,349	002859	HHW	325,587	mBtu	
0430	Schumacher Residence Hall	38,957	000034	ELE	34,181	kWh	
0430	Schumacher Residence Hall	38,957	002015	CHW	377,153	mBtu	
0430	Schumacher Residence Hall	38,957	002030	HHW	78,223	mBtu	
0359	Architecture Building B	28,545	005518	ELE	22,495	kWh	
0432	Architecture Building C	73,020	005584	ELE	85,698	kWh	
0359-0432	Architecture Building B&C	101,565	006419	CHW	766,104	mBtu	
0359-0432	Architecture Building B&C	101,565	006423	HHW	249,169	mBtu	
0434	Luedecke Building (Cyclotron)	80,646	005555	ELE	159,690	kWh	
0434	Luedecke Building (Cyclotron)	80,646	005558	ELE	1,041,046	kWh	
0434	Luedecke Building (Cyclotron)	80,646	006664	CHW	1,923,811	mBtu	
0434	Luedecke Building (Cyclotron)	80,646	006668	HHW	80,976	mBtu	
0435	Harrington Education Center Office Tower	130,844	001546	ELE	130,301	kWh	
0435	Harrington Education Center Office Tower	130,844	002792	CHW	1,023,160	mBtu	
0435	Harrington Education Center Office Tower	130,844	002796	HHW	388,095	mBtu	
0436	Reed-McDonald Building	77,435	006868	ELE	92,231	kWh	
0436	Reed-McDonald Building	77,435	002419	CHW	1,341,112	mBtu	
0436	Reed-McDonald Building	77,435	002423	HHW	312,023	mBtu	
0438	Harrington Education Center Classroom Building	61,860	003630	ELE	41,753	kWh	
0438	Harrington Education Center Classroom Building	61,860	002784	CHW	350,960	mBtu	
0438	Harrington Education Center Classroom Building	61,860	002788	HHW	533	mBtu	
0433-0440-0441-0442-0447	Mosher Commons Krueger Dunn Aston	577,584	009099	ELE	391,332	kWh	
0433	Mosher Residence Hall	155,430	009083	ELE	107,908	kWh	(2)
0433	Mosher Residence Hall	155,430	002485	CHW	1,772,087	mBtu	(2)
0433	Mosher Residence Hall	155,430	002489	HHW	779,874	mBtu	(2)
0440	Commons Hall	84,500	009237	CHW	421,820	mBtu	
0440	Commons Hall	84,500	009238	HHW	1,188	mBtu	(2)
0441	Krueger Residence Hall	112,133	009091	ELE	85,383	kWh	
0441	Krueger Residence Hall	112,133	002504	CHW	786,124	mBtu	(2)
0441	Krueger Residence Hall	112,133	002500	HHW	247,535	mBtu	#, (1), (2)
0442	Dunn Residence Hall	112,133	009095	ELE	122,505	kWh	
0442	Dunn Residence Hall	112,133	002519	CHW	899,449	mBtu	
0442	Dunn Residence Hall	112,133	002515	HHW	306,257	mBtu	
0447	Aston Residence Hall	113,388	009087	ELE	75,169	kWh	
0447	Aston Residence Hall	113,388	002474	CHW	769,270	mBtu	(2)
0447	Aston Residence Hall	113,388	002470	HHW	475,424	mBtu	
0443	Oceanography & Meteorology Building	180,316	005322	ELE	175,517	kWh	
0443	Oceanography & Meteorology Building	180,316	005323	ELE	63,569	kWh	
0443	Oceanography & Meteorology Building	180,316	006388	CHW	1,172,718	mBtu	#, (1), (2)
0443	Oceanography & Meteorology Building	180,316	006392	HHW	170,969	mBtu	(2)
0444	Peterson Building	84,831	004714	ELE	161,687	kWh	
0444	Peterson Building	84,831	002922	CHW	1,139,800	mBtu	
0444	Peterson Building	84,831	006435	HHW	266,956	mBtu	#, (1)
0445-0517	Teague Research Center and DPC Annex	89,735	003948	ELE	30,019	kWh	
0445-0517	Teague Research Center and DPC Annex	89,735	004719	ELE	53,280	kWh	
0445	Teague Research Center	63,515	006411	CHW	327,866	mBtu	
0445	Teague Research Center	63,515	006415	HHW	32,339	mBtu	
0517	DPC Annex	26,220	006563	CHW	524,473	mBtu	
0517	DPC Annex	26,220	006567	HHW	325,919	mBtu	(1)
0446	Rudder Theatre Complex	209,293	002977	ELE	104,863	kWh	
0446	Rudder Theatre Complex	209,293	002980	ELE	31,272	kWh	
0446	Rudder Theatre Complex	209,293	004297	CHW	1,711,191	mBtu	(2)
0446	Rudder Theatre Complex	209,293	004309	HHW	770,526	mBtu	(2)
0446	Rudder Tower	92,947	001550	ELE	32,478	kWh	
0446	Rudder Tower	92,947	001551	ELE	65,102	kWh	
0446	Rudder Tower	92,947	002455	CHW	742,679	mBtu	
0446	Rudder Tower	92,947	002459	HHW	92,638	mBtu	

Table I-1 October 2016 Monthly Consumption for TAMU Buildings (*Continued*)

TAMU#	Building Name	Area (ft^2)	MeterID	Type	Monthly Consumption	Units	Comments
0448	Adams Band Hall	55,248	000978	ELE	64,172	kWh	
0448	Adams Band Hall	55,248	002555	CHW	504,712	mBtu	
0448	Adams Band Hall	55,248	002566	HHW	269,910	mBtu	
0449	Biological Sciences Building - West	96,038	003978	ELE	186,596	kWh	
0449	Biological Sciences Building - West	96,038	003981	CHW	1,259,299	mBtu	
0449	Biological Sciences Building - West	96,038	003985	HHW	151,355	mBtu	
0450	Duncan Dining Hall	128,482	000300	ELE	119,902	kWh	
0450	Duncan Dining Hall	128,482	002998	CHW	793,928	mBtu	
0450	Duncan Dining Hall	128,482	003009	HHW	45,262	mBtu	
0454	MSC (East Main)	392,000	007600	ELE	343,995	kWh	
0454	MSC (West Main)	392,000	007601	ELE	226,606	kWh	
0454	MSC BOR	392,000	008047	ELE	18,191	kWh	
0454	MSC	392,000	007584	CHW	3,180,657	mBtu	
0454	MSC BOR	392,000	004184	CHW	432,722	mBtu	
0454	MSC	392,000	007585	HHW	329,772	mBtu	
0454	MSC BOR	392,000	004196	HHW	230,104	mBtu	
0456	Military Sciences Building	43,808	006939	CHW	650,476	mBtu	*
0456	Military Sciences Building	43,808	006943	HHW	195,779	mBtu	*
0457	TAES Annex Building	16,364	005863	ELE	14,458	kWh	
0457	TAES Annex Building	16,364	005913	CHW	83,161	mBtu	
0457	TAES Annex Building	16,364	005917	HHW	26,412	mBtu	
0461	Coke Building	24,466	004008	ELE	26,166	kWh	
0461	Coke Building	24,466	005307	CHW	112,033	mBtu	
0461	Coke Building	24,466	004023	HHW	904	mBtu	
0462	Academic Building	82,555	005861	ELE	22,356	kWh	
0462	Academic Building	82,555	005903	ELE	41,020	kWh	
0462	Academic Building	82,555	005905	CHW	542,180	mBtu	
0462	Academic Building	82,555	005909	HHW	184,952	mBtu	
0463	Psychology Building	48,215	001575	ELE	45,100	kWh	
0463	Psychology Building	48,215	002941	CHW	470,006	mBtu	
0463	Psychology Building	48,215	002945	HHW	40,504	mBtu	
0464	State Chemist Building	20,027	005839	ELE	10,033	kWh	
0464	State Chemist Building	20,027	005837	ELE	7,724	mBtu	
0464	State Chemist Building	20,027	005841	HHW	174	mBtu	
0465	Butler Hall	29,699	003997	ELE	34,114	kWh	
0465	Butler Hall	29,699	004000	CHW	329,474	mBtu	
0465	Butler Hall	29,699	004004	HHW	101,506	mBtu	
0467	Biological Sciences Building - East	62,273	001543	ELE	198,315	kWh	
0467	Biological Sciences Building - East	62,273	003851	CHW	843,479	mBtu	#, (1), (2)
0467	Biological Sciences Building - East	62,273	003862	HHW	110,470	mBtu	(2)
0468	Evans Library	712,093	000304	ELE	265,343	kWh	
0468	Evans Library	712,093	000318	ELE	153,699	kWh	
0468	Evans Library	712,093	000319	ELE	103,115	kWh	*
0468	Evans Library	712,093	000320	ELE	87,732	kWh	
0468	Evans Library	712,093	006429	ELE	99,228	kWh	*
0468	Evans Library	712,093	003701	CHW	1,408,440	mBtu	
0468	Evans Library	712,093	003895	CHW	1,617,835	mBtu	
0468	Evans Library	712,093	003903	CHW	308,596	mBtu	*
0468	Evans Library	712,093	003911	CHW	1,299,741	mBtu	*
0468	Evans Library	712,093	003712	HHW	180,851	mBtu	
0468	Evans Library	712,093	003899	HHW	286,643	mBtu	
0468	Evans Library	712,093	003907	HHW	61,233	mBtu	*
0468	Evans Library	712,093	003922	HHW	67,501	mBtu	*
0468	Evans Library	712,093	005303	HHW	28,434	mBtu	*
0469	Central Campus Parking Garage	251,304	000306	ELE	46,396	kWh	
0469	Central Campus Parking Garage	2,844	003716	CHW	43,992	mBtu	
0469	Central Campus Parking Garage	2,844	003720	HHW	3,578	mBtu	
0470	Glasscock History Bldg	39,887	006407	ELE	19,577	kWh	
0470	Glasscock History Bldg	39,887	006638	CHW	196,857	mBtu	
0470	Glasscock History Bldg	39,887	006642	HHW	23,097	mBtu	
0471	Pavilion	40,062	001455	ELE	40,938	kWh	
0471	Pavilion	40,062	002769	CHW	242,758	mBtu	
0471	Pavilion	40,062	002780	HHW	730	mBtu	
0472	Animal Industries	44,856	009042	ELE	52,172	kWh	
0472	Animal Industries	44,856	009109	CHW	442,945	mBtu	
0472	Animal Industries	44,856	009113	HHW	12,020	mBtu	
0473	Williams Administration Building	69,898	007945	ELE	49,081	kWh	
0473	Williams Administration Building	69,898	007946	CHW	382,639	mBtu	(2)
0473	Williams Administration Building	69,898	007947	HHW	48,254	mBtu	(2)

Table I-1 October 2016 Monthly Consumption for TAMU Buildings (*Continued*)

TAMU#	Building Name	Area (ft^2)	MeterID	Type	Monthly Consumption	Units	Comments
0474	YMCA Building	36,035	007524	ELE	26,392	kWh	
0474	YMCA Building	36,035	007525	CHW	173,426	mBtu	
0474	YMCA Building	36,035	007526	HHW	8,771	mBtu	
0476	Francis Hall	36,850	008015	ELE	39,995	kWh	
0476	Francis Hall	36,850	008033	CHW	395,154	mBtu	
0476	Francis Hall	36,850	008034	HHW	4,529	mBtu	
0477	Anthropology Building	51,592	001558	ELE	34,829	kWh	
0477	Anthropology Building	51,592	003664	CHW	385,337	mBtu	
0477	Anthropology Building	51,592	003668	HHW	44,441	mBtu	
0478	Scoates Hall	62,228	007961	ELE	52,717	kWh	(2)
0478	Scoates Hall	62,228	007968	CHW	409,375	mBtu	(2)
0478	Scoates Hall	62,228	007969	HHW	34,609	mBtu	(2)
0480	Bolton Hall	39,686	006845	ELE	34,635	kWh	
0480	Bolton Hall	39,686	007012	CHW	222,527	mBtu	
0480	Bolton Hall	39,686	007016	HHW	46,766	mBtu	
0481	Heaton Hall	13,640	005712	ELE	NA	kWh	*
0481	Heaton Hall	13,640	007531	CHW	279,439	mBtu	
0481	Heaton Hall	13,640	007535	HHW	205,031	mBtu	
0482	Fermier Hall	19,074	005779	ELE	19,394	kWh	
0482	Fermier Hall	19,074	005878	CHW	160,192	mBtu	(2)
0482	Fermier Hall	19,074	005881	HHW	11	mBtu	(2)
0483	Thompson Hall	81,404	003688	ELE	78,422	kWh	
0483	Thompson Hall	81,404	003887	CHW	268,181	mBtu	#, (1)
0483	Thompson Hall	81,404	003891	HHW	15,481	mBtu	#, (1)
0484	Chemistry Building	205,393	007152	ELE	95,525	kWh	
0484	Chemistry Building	205,393	007556	ELE	13,514	kWh	
0484	Chemistry Building	205,393	007557	ELE	126,973	kWh	#, (1)
0484	Chemistry Building	205,393	007559	ELE	174,087	kWh	
0484	Chemistry Building	205,393	007028	CHW	1,216,141	mBtu	
0484	Chemistry Building	205,393	007223	CHW	3,581,420	mBtu	
0484	Chemistry Building	205,393	007032	HHW	259,722	mBtu	
0484	Chemistry Building	205,393	007227	HHW	804,723	mBtu	
0490	Halbouty Geosciences Building	120,874	006691	ELE	60,882	kWh	
0490	Halbouty Geosciences Building	120,874	006695	ELE	111,375	kWh	
0490	Halbouty Geosciences Building	120,874	006896	CHW	1,389,213	mBtu	
0490	Halbouty Geosciences Building	120,874	006913	CHW	663,955	mBtu	
0490	Halbouty Geosciences Building	120,874	006900	HHW	357,154	mBtu	
0490	Halbouty Geosciences Building	120,874	006917	HHW	202,703	mBtu	
0492	Civil Engineering Building	56,537	005783	ELE	72,416	kWh	
0492	Civil Engineering Building	56,537	005950	CHW	447,449	mBtu	(2)
0492	Civil Engineering Building	56,537	005954	HHW	126,393	mBtu	#, (1), (2)
0495	Sbisa Dining Hall	94,233	000352	ELE	157,036	kWh	
0495	Sbisa Dining Hall	94,233	000353	ELE	134,443	kWh	
0495	Sbisa Dining Hall	94,233	001951	CHW	1,596,994	mBtu	
0495	Sbisa Dining Hall	94,233	001957	HHW	169,823	mBtu	
0496	Utilities & Energy Services Central Office	46,110	007706	ELE	11,946	kWh	(2)
0496	Utilities & Energy Services Central Office	46,110	006929	CHW	156,596	mBtu	(2)
0496	Utilities & Energy Services Central Office	46,110	006933	HHW	33,410	mBtu	(2)
0499	Engineering Innovation Center	28,339	001561	ELE	29,919	kWh	
0499	Engineering Innovation Center	28,339	002672	CHW	115,804	mBtu	*, (2)
0499	Engineering Innovation Center	28,339	002683	HHW	39,376	mBtu	*
0501	Concrete Materials Laboratory	9,600	005791	ELE	7,836	kWh	
0506	Nagle Hall	32,306	001484	ELE	12,535	kWh	(2)
0506	Nagle Hall	32,306	003619	CHW	367,204	mBtu	(2)
0506	Nagle Hall	32,306	003623	HHW	21,585	mBtu	(2)
0507	Veterinary Medical Science Building	69,367	003013	ELE	77,792	kWh	
0507	Veterinary Medical Science Building	69,367	003640	CHW	1,206,325	mBtu	
0507	Veterinary Medical Science Building	69,367	003644	HHW	461,665	mBtu	
0508	Veterinary Teaching Hospital	96,416	003022	ELE	101,173	kWh	
0508-1026	Veterinary Teaching Hospital and Veterinary Medicine Administration	191,096	004166	CHW	1,959,448	mBtu	
0508-1026	Veterinary Teaching Hospital and Veterinary Medicine Administration	191,096	004170	HHW	442,882	mBtu	(2)
0511	Heep Laboratory Building	40,476	005787	ELE	69,161	kWh	
0511	Heep Laboratory Building	40,476	005821	CHW	514,568	mBtu	#, (1)
0511	Heep Laboratory Building	40,476	005825	HHW	198,489	mBtu	
0512	All Faiths Chapel	8,999	004340	ELE	7,546	kWh	
0512	All Faiths Chapel	8,999	004288	CHW	75,165	mBtu	
0512	All Faiths Chapel	8,999	004293	HHW	38,675	mBtu	#, (1)
0513	Doherty Building	42,336	000299	ELE	57,153	kWh	
0513	Doherty Building	42,336	002898	CHW	821,158	mBtu	
0513	Doherty Building	42,336	002902	HHW	302,465	mBtu	

Table I-1 October 2016 Monthly Consumption for TAMU Buildings (*Continued*)

TAMU#	Building Name	Area (ft^2)	MeterID	Type	Monthly Consumption	Units	Comments
0514	Munnerlyn Astronomy & Space Sciences Engineering	22,134	007558	ELE	14,230	kWh	
0514	Munnerlyn Astronomy & Space Sciences Engineering	22,134	007487	CHW	96,391	mBtu	
0514	Munnerlyn Astronomy & Space Sciences Engineering	22,134	007491	HHW	3,817	mBtu	
0516	Computing Services Center	30,014	005259	ELE	528,010	kWh	
0516	Computing Services Center	30,014	003959	CHW	1,634,007	mBtu	
0516	Computing Services Center	30,014	003963	HHW	2	mBtu	
0520	Beutel Health Center	63,318	003785	ELE	71,695	kWh	
0520	Beutel Health Center	63,318	003933	CHW	414,570	mBtu	
0520	Beutel Health Center	63,318	003944	HHW	50,910	mBtu	
0521	Heldenfels Hall	104,949	001547	ELE	107,549	kWh	
0521	Heldenfels Hall	104,949	002962	CHW	1,148,112	mBtu	
0521	Heldenfels Hall	104,949	002973	HHW	122,652	mBtu	
0524	Blocker Building	257,953	001545	ELE	219,116	kWh	
0524	Blocker Building	257,953	002914	CHW	1,431,150	mBtu	
0524	Blocker Building	257,953	002918	HHW	12,036	mBtu	(2)
0548	Clements Residence Hall	62,156	000048	ELE	39,217	kWh	
0548	Clements Residence Hall	62,156	002729	CHW	944,455	mBtu	
0548	Clements Residence Hall	62,156	002740	HHW	398,105	mBtu	
0549	Haas Residence Hall	69,668	001398	ELE	52,884	kWh	*
0549	Haas Residence Hall	69,668	002983	CHW	990,194	mBtu	
0549	Haas Residence Hall	69,668	002994	HHW	610,659	mBtu	
0550	McFadden Residence Hall	62,156	000339	ELE	44,257	kWh	
0550	McFadden Residence Hall	62,156	002188	CHW	924,217	mBtu	
0550	McFadden Residence Hall	62,156	002192	HHW	521,041	mBtu	
0652	Neeley Residence Hall	69,668	000056	ELE	49,901	kWh	
0652	Neeley Residence Hall	69,668	002147	CHW	542,888	mBtu	(2)
0652	Neeley Residence Hall	69,668	002151	HHW	202,388	mBtu	(2)
0653	Hobby Residence Hall	62,156	000057	ELE	46,307	kWh	
0653	Hobby Residence Hall	62,156	002401	CHW	776,358	mBtu	
0653	Hobby Residence Hall	62,156	002405	HHW	311,904	mBtu	
0682	Wisenbaker Engineering Research Center	177,704	005246	ELE	276,711	kWh	
0682	Wisenbaker Engineering Research Center	177,704	003879	CHW	1,526,787	mBtu	
0682	Wisenbaker Engineering Research Center	177,704	003883	HHW	172,330	mBtu	
0740	McNew Laboratory	20,904	005874	ELE	51,583	kWh	*
0740	McNew Laboratory	20,904	005974	CHW	489,658	mBtu	
0740	McNew Laboratory	20,904	005968	HHW	26,577	mBtu	#, (1)
0806	Soil Testing Labs	5,544	006875	ELE	20,912	kWh	
0815	Entomology Research Lab	17,618	005799	ELE	31,534	kWh	
0815	Entomology Research Lab	17,618	006043	CHW	157,928	mBtu	(2)
0880	TVMC-Small Animal Building	3,260	005958	CHW	31,010	mBtu	#, (1)
0880	TVMC-Small Animal Building	3,260	005962	HHW	28	mBtu	(2)
0972	Laboratory Animal Care Building	52,178	007063	ELE	135,819	kWh	
0972	Laboratory Animal Care Building	52,178	007067	ELE	50,900	kWh	
0972	Laboratory Animal Care Building	52,178	007071	CHW	2,408,172	mBtu	
0972	Laboratory Animal Care Building	52,178	006991	HHW	202,915	mBtu	
1020	Vivarium III	12,234	005857	ELE	24,250	kWh	
1020	Vivarium III	12,234	005997	CHW	251,229	mBtu	*
1020	Vivarium III	12,234	006001	HHW	17,811	mBtu	*
1026	Veterinary Medicine Administration	94,680	006072	ELE	128,984	kWh	
1026	Veterinary Medicine Administration	94,680	006049	CHW	1,204,913	mBtu	
1026	Veterinary Medicine Administration	98,680	006053	HHW	427,361	mBtu	* (2)
1041	Texas Vet Med Diagnostic Lab	55,169	001466	ELE	100,359	kWh	*
1041	Texas Vet Med Diagnostic Lab	55,169	001539	ELE	77,797	kWh	# (1)
1041	Texas Vet Med Diagnostic Lab	55,169	003817	CHW	881,044	mBtu	*
1041	Texas Vet Med Diagnostic Lab	55,169	004137	CHW	1,368,047	mBtu	*
1041	Texas Vet Med Diagnostic Lab	55,169	003821	HHW	110,612	mBtu	*
1041	Texas Vet Med Diagnostic Lab	55,169	004130	HHW	169,965	mBtu	*
1042	Forest Science Laboratory Building	9,632	006036	ELE	33,282	kWh	
1085	Veterinary Small Animal Hospital	103,440	004136	ELE	242,713	kWh	
1085	Veterinary Small Animal Hospital	103,440	003656	CHW	1,913,788	mBtu	
1085	Veterinary Small Animal Hospital	103,440	003660	HHW	354,469	mBtu	
1089	Utilities Energy Office Annex	2,937	006964	ELE	4,760	kWh	
1146	Biological Control Facility	13,492	005795	ELE	31,651	kWh	
1146	Biological Control Facility	13,492	005887	CHW	158,289	mBtu	
1146	Biological Control Facility	13,492	005891	HHW	42,175	mBtu	
1156	Physical Plant Administration & Shops	101,704	007483	ELE	130,749	kWh	
1156	Physical Plant Administration & Shops	101,704	007679	CHW	359,966	mBtu	(2)
1156	Physical Plant Administration & Shops	101,704	007683	HHW	100,712	mBtu	

Table I-1 October 2016 Monthly Consumption for TAMU Buildings (*Continued*)

TAMU#	Building Name	Area (ft^2)	MeterID	Type	Monthly Consumption	Units	Comments
1184	Veterinary Anatomic Pathology	17,223	001445	ELE	56,299	kWh	
1184	Veterinary Anatomic Pathology	17,223	006995	CHW	441,870	mBtu	
1184	Veterinary Anatomic Pathology	17,223	006999	HHW	103,940	mBtu	
1194	Veterinary Large Animal Hospital	140,865	005256	ELE	108,247	kWh	
1194	Veterinary Large Animal Hospital	140,865	003016	ELE	70,795	kWh	
1194	Veterinary Large Animal Hospital	140,865	007455	ELE	40,023	kWh	
1194	Veterinary Large Animal Hospital	140,865	003648	CHW	2,267,549	mBtu	
1194	Veterinary Large Animal Hospital	140,865	007456	CHW	251,281	mBtu	
1194	Veterinary Large Animal Hospital	140,865	003652	HHW	720,467	mBtu	(2)
1194	Veterinary Large Animal Hospital	140,865	007457	HHW	44,127	mBtu	
1197	Veterinary Research Building	114,666	006355	ELE	73,146	kWh	
1197	Veterinary Research Building	114,666	006359	ELE	35,514	kWh	
1197	Veterinary Research Building	114,666	006062	CHW	2,526,542	mBtu	
1197	Veterinary Research Building	114,666	006066	HHW	386,476	mBtu	
1416	Hullabaloo Residence Hall	253,452	007845	ELE	200,510	kWh	
1416	Hullabaloo Residence Hall	253,452	007846	CHW	1,351,102	mBtu	
1416	Hullabaloo Residence Hall	253,452	007847	HHW	110,759	mBtu	
1450	University Apartments - Laundry at the Gardens	1,428	006885	ELE	8,028	kWh	
1451	University Apartments - The Gardens J	33,535	006981	ELE	20,126	kWh	
1452	University Apartments - The Gardens K	33,535	006979	ELE	18,644	kWh	
1453	University Apartments - The Gardens L	33,535	006884	ELE	20,389	kWh	
1454	University Apartments - The Gardens F	33,535	006980	ELE	21,311	kWh	*
1455	University Apartments - The Gardens G	33,535	006882	ELE	19,119	kWh	*
1456	University Apartments - The Gardens H	33,535	007962	ELE	19,949	kWh	
1457	University Apartments - The Gardens M	33,535	007503	ELE	25,617	kWh	
1458	University Apartments - The Gardens N	33,535	007504	ELE	22,798	kWh	
1459	University Apartments - The Gardens P	33,535	007505	ELE	23,728	kWh	
1460	University Apartments - The Gardens Q	33,535	007506	ELE	20,821	kWh	
1497	Utilities & Energy Services Business Office	3,480	007082	ELE	3,781	kWh	
1497	Utilities & Energy Services Business Office	3,480	006341	CHW	22,291	mBtu	
1497	Utilities & Energy Services Business Office	3,480	006345	HHW	16	mBtu	
1501	Kleberg Center	165,031	007449	ELE	275,451	kWh	
1501	Kleberg Center	165,031	002624	CHW	1,610,876	mBtu	
1501	Kleberg Center	165,031	002628	HHW	692,620	mBtu	
1502	Heep Center	158,979	001556	ELE	273,908	kWh	
1502	Heep Center	158,979	002599	CHW	2,010,991	mBtu	
1502	Heep Center	158,979	002603	HHW	264,274	mBtu	# (1)
1503	Cater-Mattil Hall	27,958	007977	ELE	85,595	kWh	
1503	Cater-Mattil Hall	27,958	008001	CHW	531,918	mBtu	
1504	Reynolds Medical Sciences Building	169,859	003975	ELE	280,565	kWh	
1504	Reynolds Medical Sciences Building	169,859	003989	CHW	2,503,961	mBtu	(2)
1504	Reynolds Medical Sciences Building	169,859	003993	HHW	605,009	mBtu	(2)
1505	Rosenthal Meat Science & Technology Center	30,889	003627	ELE	140,095	kWh	
1505	Rosenthal Meat Science & Technology Center	30,889	002573	CHW	240,250	mBtu	
1505	Rosenthal Meat Science & Technology Center	30,889	002577	HHW	23,651	mBtu	# (1)
1506	Horticulture-Forest Science Building	118,648	001544	ELE	167,681	kWh	
1506	Horticulture-Forest Science Building	118,648	003967	CHW	821,164	mBtu	
1506	Horticulture-Forest Science Building	118,648	003971	HHW	104,450	mBtu	
1507	Biochemistry-Biophysics Building	166,079	001459	ELE	182,441	kWh	
1507	Biochemistry-Biophysics Building	166,079	001460	ELE	171,504	kWh	
1507	Biochemistry-Biophysics Building	166,079	003025	CHW	2,205,061	mBtu	
1507	Biochemistry-Biophysics Building	166,079	003029	HHW	698,622	mBtu	
1508	Price Hobgood Ag. Engineering Research Lab	27,666	005638	ELE	27,654	kWh	
1508	Price Hobgood Ag. Engineering Research Lab	27,666	006005	CHW	169,554	mBtu	
1508	Price Hobgood Ag. Engineering Research Lab	27,666	006009	HHW	2,509	mBtu	
1509	Medical Sciences Library	84,183	000350	ELE	116,274	kWh	
1509	Medical Sciences Library	84,183	003777	CHW	809,093	mBtu	
1509	Medical Sciences Library	84,183	003781	HHW	74,078	mBtu	
1510	Wehner Building	259,681	006849	ELE	216,451	kWh	
1510	Wehner Building	259,681	006685	ELE	254,815	kWh	
1510	Wehner Building	259,681	002687	CHW	1,929,998	mBtu	
1510	Wehner Building	259,681	002691	HHW	185,923	mBtu	
1511	West Campus Library Facility	68,125	004342	ELE	98,538	kWh	
1511	West Campus Library Facility	68,125	004313	CHW	788,472	mBtu	
1511	West Campus Library Facility	68,125	004318	HHW	100,122	mBtu	
1512	Southern Crop Improvement Greenhouse	48,154	005931	ELE	83,167	kWh	*, (1)
1513	Borlaug Center for Southern Crop Improvement	68,739	005802	ELE	320,488	kWh	
1513	Borlaug Center for Southern Crop Improvement	68,739	005936	CHW	1,414,287	mBtu	
1513	Borlaug Center for southern Crop Improvement	68,739	005895	HHW	188,582	mBtu	

Table I-1 October 2016 Monthly Consumption for TAMU Buildings (*Continued*)

TAMU#	Building Name	Area (ft^2)	MeterID	Type	Monthly Consumption	Units	Comments
1518	TX School of Rural Public Health A	69,079	005273	ELE	75,701	kWh	
1519	TX School of Rural Public Health B	24,761	005274	ELE	55,710	kWh	#, (1)
1520	TX School of Rural Public Health C	13,264	005275	ELE	101,879	kWh	#, (1)
1518-1519-1520	TX School of Rural Public Health A,B,C	107,104	005294	CHW	1,308,710	mBtu	
1518-1519-1520	TX School of Rural Public Health A,B,C	107,104	005298	HHW	216,394	mBtu	
1525	Nuclear Magnetic Resonance Facility	37,282	006718	ELE	88,766	kWh	
1525	Nuclear Magnetic Resonance Facility	37,282	006715	CHW	912,038	mBtu	
1525	Nuclear Magnetic Resonance Facility	37,282	006716	HHW	392,016	mBtu	
1530	Interdisciplinary Life Sciences Building	218,540	006286	ELE	413,793	kWh	
1530	Interdisciplinary Life Sciences Building	218,540	006288	ELE	215,743	kWh	
1530	Interdisciplinary Life Sciences Building	218,540	006290	CHW	4,497,976	mBtu	
1530	Interdisciplinary Life Sciences Building	218,540	006294	HHW	963,139	mBtu	
1535	Agriculture and Life Sciences Building	168,353	007205	ELE	119,635	kWh	
1535	Agriculture and Life Sciences Building	168,353	007206	CHW	691,286	mBtu	
1535	Agriculture and Life Sciences Building	168,353	007207	HHW	24,352	mBtu	
1536	AgriLife Services Building	80,907	007571	ELE	47,525	kWh	
1536	AgriLife Services Building	80,907	007572	CHW	256,434	mBtu	
1536	AgriLife Services Building	80,907	007573	HHW	16,272	mBtu	
1538	Agriculture Program Visitors Center	12,923	007209	ELE	12,414	kWh	
1538	Agriculture Program Visitors Center	12,923	007210	CHW	82,844	mBtu	
1538	Agriculture Program Visitors Center	12,923	007211	HHW	8,761	mBtu	
1540	Physical Education Activity Program Building	116,900	007881	ELE	81,174	kWh	
1540	Physical Education Activity Program Building	116,900	007878	CHW	613,686	mBtu	
1540	Physical Education Activity Program Building	116,900	007879	HHW	118,749	mBtu	
1550	Olsen Field at Bluebell Park	60,537	007560	ELE	108,837	kWh	
1554	Reed Arena	230,000	007582	ELE	167,924	kWh	
1554	Reed Arena	230,000	006243	ELE	775	kWh	*
1554	Reed Arena	230,000	006244	ELE	85,219	kWh	*
1554-1558	Reed Arena and Cox-McFerrin Center	328,185	007576	CHW	2,304,845	mBtu	
1554-1558	Reed Arena and Cox-McFerrin Center	328,185	007578	HHW	649,548	mBtu	
1558	Cox-McFerrin Center for Aggie Basketball	98,185	007581	ELE	83,694	kWh	
1558	Cox-McFerrin Center for Aggie Basketball	98,185	007575	CHW	470,997	mBtu	
1558	Cox-McFerrin Center for Aggie Basketball	98,185	007577	HHW	193,191	mBtu	
1559	West Campus Parking Garage	1,541,457	001453	ELE	172,642	kWh	
1559	West Campus Parking Garage	13,000	004322	CHW	66,224	mBtu	
1559	West Campus Parking Garage	13,000	004327	HHW	6,607	mBtu	
1560	Student Recreation Center	334,642	000363	ELE	350,842	kWh	
1560	Student Recreation Center	334,642	000366	ELE	396,457	kWh	
1560	Student Recreation Center	334,642	002933	CHW	4,804,935	mBtu	
1560	Student Recreation Center	334,642	002937	HHW	1,507,394	mBtu	
1589-1590	White Creek Apartment 1 and White Creek Apts Activity Center	176,454	009197	ELE	114,403	kWh	
1589-1590	White Creek Apartment 1 and White Creek Apts Activity Center	176,454	009198	CHW	768,919	mBtu	
1589-1590	White Creek Apartment 1 and White Creek Apts Activity Center	176,454	009199	HHW	103,671	mBtu	
1591	White Creek Apartment 2	179,467	008528	ELE	129,686	kWh	
1591	White Creek Apartment 2	179,467	008529	CHW	717,318	mBtu	
1591	White Creek Apartment 2	179,467	008533	HHW	105,506	mBtu	
1592	White Creek Apartment 3	179,467	008538	ELE	128,242	kWh	
1592	White Creek Apartment 3	179,467	008539	CHW	780,876	mBtu	
1592	White Creek Apartment 3	179,467	008543	HHW	96,902	mBtu	
1600	Gilchrist TTI Building	67,143	005286	ELE	57,224	kWh	*
1600	Gilchrist TTI Building	67,143	002649	CHW	399,337	mBtu	
1600	Gilchrist TTI Building	67,143	002653	HHW	46,212	mBtu	
1601	International Ocean Discovery Building	86,576	006351	ELE	123,705	kWh	(2)
1601	International Ocean Discovery Building	86,576	006382	CHW	242,810	mBtu	(2)
1601	International Ocean Discovery Building	86,576	008144	CHW	52,982	mBtu	(2)
1601	International Ocean Discovery Building	86,576	008145	HHW	10,059	mBtu	(2)
1604	Offshore Technology Research Center	40,014	006659	ELE	96,093	kWh	
1604	Offshore Technology Research Center	40,014	006660	ELE	0	kWh	(2)
1604	Offshore Technology Research Center	40,014	008142	CHW	569,229	mBtu	
1604	Offshore Technology Research Center	40,014	008143	HHW	167,141	mBtu	
1606	George Bush Presidential Library & Museum	121,678	000244	ELE	109,292	kWh	
1606	George Bush Presidential Library & Museum	121,678	002808	CHW	1,202,236	mBtu	
1606	George Bush Presidential Library & Museum	121,678	002812	HHW	301,357	mBtu	
1607	Allen Building	133,327	000243	ELE	105,105	kWh	
1607	Allen Building	133,327	002800	CHW	647,306	mBtu	
1607	Allen Building	133,327	002804	HHW	31,602	mBtu	
1608	Annenberg Presidential Conference Center	65,688	000245	ELE	77,624	kWh	
1608	Annenberg Presidential Conference Center	65,688	002761	CHW	834,534	mBtu	
1608	Annenberg Presidential Conference Center	65,688	002765	HHW	317,546	mBtu	

Table I-1 October 2016 Monthly Consumption for TAMU Buildings (*Continued*)

TAMU#	Building Name	Area (ft^2)	MeterID	Type	Monthly Consumption	Units	Comments
1609	TTI Headquarters	66,707	006495	ELE	58,215	kWh	
1609	TTI Headquarters	66,707	006496	CHW	397,240	mBtu	
1609	TTI Headquarters	66,707	006497	HHW	50,154	mBtu	
1611	Engineering Research Building	68,807	008462	ELE	189,551	kWh	
1611	Engineering Research Building	68,807	008463	CHW	1,901,451	mBtu	
1611	Engineering Research Building	68,807	008467	HHW	533,815	mBtu	
1800	General Services Complex	203,369	005441	ELE	192,363	kWh	
1800	General Services Complex	203,369	005468	CHW	975,593	mBtu	
1800	General Services Complex	203,369	005472	HHW	49,012	mBtu	
1809	New TVMDL	NA	009180	ELE	NA	kWh	*
1809	New TVMDL	NA	009181	CHW	NA	mBtu	*
1809	New TVMDL	NA	009174	HHW	NA	mBtu	*
1810	Office of the State Chemist Building	31,735	009073	ELE	62,008	kWh	*
1810	Office of the State Chemist Building	31,735	005460	CHW	468,939	mBtu	
1810	Office of the State Chemist Building	31,735	005464	HHW	81,526	mBtu	
1811	Vet Med Research Bldg Addition	52,993	006705	ELE	230,295	kWh	
1811	Vet Med Research Bldg Addition	52,993	006706	CHW	1,214,139	mBtu	
1811	Vet Med Research Bldg Addition	52,993	006707	HHW	295,023	mBtu	
1812	Veterinary Medicine Building 1	138,460	009404	ELE	191,282	kWh	*
1813	Veterinary Medicine Building 2	116,492	009418	ELE	203,948	kWh	*
1814	Veterinary Medicine Building 3	135,470	009405	ELE	1,904	kWh	*
1812-1813-1814	Veterinary Medicine Building 1, 2 and 3	390,422	009406	CHW	3,603,408	mBtu	*
1812-1813-1814	Veterinary Medicine Building 1, 2 and 3	390,422	009410	HHW	634,962	mBtu	*
1900	Texas Institute for Genomic Medicine	34,120	005548	ELE	89,005	kWh	
1900	Texas Institute for Genomic Medicine	34,120	005545	CHW	1,290,677	mBtu	
1900	Texas Institute for Genomic Medicine	34,120	005546	HHW	283,624	mBtu	#, (1)
1904	Texas A&M Institute for Preclinical Studies A	113,559	006364	ELE	244,175	kWh	
1904	Texas A&M Institute for Preclinical Studies A	113,559	006365	CHW	2,401,607	mBtu	
1904	Texas A&M Institute for Preclinical Studies A	113,559	006366	HHW	626,118	mBtu	
1910	National Center for Therapeutics Manufacturing	149,924	007517	ELE	202,991	kWh	
1910	National Center for Therapeutics Manufacturing	149,924	007518	ELE	174,861	kWh	
1910	National Center for Therapeutics Manufacturing	149,924	007519	CHW	4,350,447	mBtu	
1910	National Center for Therapeutics Manufacturing	149,924	007520	HHW	1,183,051	mBtu	
1911	Multi-Species Research Building	21,000	009138	ELE	27,438	kWh	
1911	Multi-Species Research Building	21,000	009129	CHW	413,065	mBtu	
1911	Multi-Species Research Building	21,000	009133	HHW	159,416	mBtu	
10226	NCTM Manufacturing Building	113,397	007648	CHW	3,777,637	mBtu	
10226	NCTM Manufacturing Building	113,397	007649	HHW	925,249	mBtu	
10226	NCTM Manufacturing Building	113,397	008133	HHW	124,017	mBtu	

1 mBtu = 1 000 Btu

NA: Not available
Monthly consumption in blue: Modified values
* : Missing data
# : Questionable data
(1): Consumption estimated and documented in the report *Part II - Data Analysis: Energy Use Estimation and Observations Section 2*
(2): Observation(s) documented in the report *Part II - Data Analysis: Energy Use Estimation and Observations Section 3*
(3): Missing data or changed consumption levels due to construction

II. Data Analysis: Energy Use Estimation and Observation

II-1 Meters with Missing Energy Consumption Data

During the month of October 2016, 41 meters in 24 buildings and complexes have missing daily data. The missing data have been filled in using consumption models based on the past data if available or using linear interpolation or some sort of average, and the monthly consumption has been estimated with the filled-in daily consumption. Table II-1 is the list of meters with missing data.

Table II-1 Meters with missing data during October 2016

Building No.	Building Name	MeterID	Type	Unit	Original Monthly Consumption	Estimated Monthly Consumption	# of Days	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1404	Plank LLC	009372	CHW	mBtu	255,615	352,555	8	M	M	M	M	M	M	M	M																					
1404	Plank LLC	009376	HHW	mBtu	76,327	102,876	8	A	A	A	A	A	A	A	A																					
0403	Fountain Hall Dorm 4	009338	ELE	kWh	1,290	15,999	28				A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
0456	Military Sciences Building	006939	CHW	mBtu	NA	650,476	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0456	Military Sciences Building	006943	HHW	mBtu	NA	195,779	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0468	Evans Library	000319	ELE	kWh	103,115	*	3								M	M	M																			
0468	Evans Library	006429	ELE	kWh	99,228	*	2							M	M																					
0468	Evans Library	003903	CHW	mBtu	242,571	308,596	7	M	M	M	M	M	M	M																						
0468	Evans Library	003911	CHW	mBtu	1,018,074	1,299,741	7	M	M	M	M	M	M	M																						
0468	Evans Library	003907	HHW	mBtu	35,489	61,233	13	M	M	M	M	M	M	M	M	M	M	M	M	M																
0468	Evans Library	003922	HHW	mBtu	33,532	67,501	13	M	M	M	M	M	M	M	M	M	M	M	M	M																
0468	Evans Library	005303	HHW	mBtu	23,419	28,434	7	M	M	M	M	M	M	M																						
0481	Heaton Hall	005712	ELE	kWh	NA	***	31																													
0499	Engineering Innovation Center	002672	CHW	mBtu	111,544	115,804	2											M	M																	
0499	Engineering Innovation Center	002683	HHW	mBtu	38,104	39,376	2											M	M																	
0549	Haas Residence Hall	001398	ELE	kWh	40,981	52,884	11	A	A	A	A	A	A	A			LI	LI	LI	LI																
0740	McNew Laboratory	005874	ELE	kWh	51,583	*	2																				LI	LI								
1020	Vivarium III	005997	CHW	mBtu	196,763	251,229	7	M	M	M	M	M	M	M																						
1020	Vivarium III	006001	HHW	mBtu	14,212	17,811	7	A	A	A	A	A	A	A																						
1026	Veterinary Medicine Administration	006053	HHW	mBtu	NA	427,361	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1041	Texas Vet Med Diagnostic Lab	001466	ELE	kWh	NA	100,359	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1041	Texas Vet Med Diagnostic Lab	003817	CHW	mBtu	NA	881,044	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1041	Texas Vet Med Diagnostic Lab	004137	CHW	mBtu	NA	1,368,047	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1041	Texas Vet Med Diagnostic Lab	003821	HHW	mBtu	NA	110,612	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1041	Texas Vet Med Diagnostic Lab	004130	HHW	mBtu	NA	169,965	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1454	University Apartments - The Gardens F	006980	ELE	kWh	NA	21,311	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1455	University Apartments - The Gardens G	006882	ELE	kWh	NA	19,119	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1512	Southern Crop Improvement Greenhouse	005931	ELE	kWh	70,849	**	3															M	M			M									
1520	TX School of Rural Public Health C	005275	ELE	kWh	55,710	**	2							M	M																					
1554	Reed Arena	006243	ELE	kWh	NA	775	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1554	Reed Arena	006244	ELE	kWh	NA	85,219	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1600	Gilchrist TTI Building	005286	ELE	kWh	57,224	57,224	2								M	M																				
1809	New TVMDL	009180	ELE	kWh	NA	NA	31																													
1809	New TVMDL	009181	CHW	mBtu	NA	NA	31																													
1809	New TVMDL	009174	HHW	mBtu	NA	NA	31																													
1810	Office of the State Chemist Building	009073	ELE	kWh	NA	62,008	31	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
1812	Veterinary Medicine Building 1	009404	ELE	kWh	187,119	191,282	24	M	M			M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M			
1813	Veterinary Medicine Building 2	009418	ELE	kWh	1,861	203,948	24	M	M			M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M			
1814	Veterinary Medicine Building 3	009405	ELE	kWh	194,251	1,904	24	M	M			M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M			
1812-1813-1814	Veterinary Medicine Building 1, 2 and 3	009406	CHW	mBtu	NA	3,603,408	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1812-1813-1814	Veterinary Medicine Building 1, 2 and 3	009410	HHW	mBtu	NA	634,962	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M

* Monthly consumption evaluated from the cumulative data is not affected by the missing data.
** See Table II-2 for the estimated consumption.
*** Consumption is not estiamted because reliable consumtpion model is not available.
NA: Not available

II-2 Meters with Estimated Consumption for Problematic Data

During the month of October 2016, 25 meters in 23 buildings have estimated daily consumption because the recorded consumption is found to be problematic or questionable. For each of these meters, alternative consumption has been estimated using the best possible method. Table II-2 lists these meters with indications of the days with estimated data. Detailed descriptions for individual cases follow.

Table II-2 Meters with problematic data during October 2016

Building No.	Building Name /MeterID(s)	Type	Unit	Original Monthly Consumption	Estimated Monthly Consumption	# of days	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
0291	Rudder Residence Hall																																				
	002132	CHW	mBtu	929,981	813,832	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	002136	HHW	mBtu	490,814	329,419	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0292	Eppright Residence Hall																																				
	002266	HHW	mBtu	128,886	185,878	11														M	M	M	M	M	M	M	M	M	M								
0376	Chemistry Building Addition																																				
	007119	HHW	mBtu	548,437	939,825	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1402	Buzbee Leadership Learning Center																																				
	007725	CHW	mBtu	303,470	173,182	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0441	Krueger Residence Hall																																				
	002500	HHW	mBtu	73,587	247,535	26				A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		A	A	A	A	A	A	A	A
0443	Oceanography & Meteorology Building																																				
	006388	CHW	mBtu	828,978	1,172,718	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0444	Peterson Building																																				
	006435	HHW	mBtu	2,272,504	266,956	14	M	M	M	M	M	M	M	M	M	M	M	M	M	M																	
0517	DPC Annex																																				
	006567	HHW	mBtu	124,803	325,919	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0467	Biological Sciences Building - East																																				
	003851	CHW	mBtu	364,177	843,479	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0483	Thompson Hall																																				
	003887	CHW	mBtu	66,913	268,181	29	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M			M	M	
	003891	HHW	mBtu	38,994	15,481	2																														M	M
0484	Chemistry Building																																				
	007557	ELE	kWh	38,730	126,973	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0492	Civil Engineering Building																																				
	005954	HHW	mBtu	118,612	126,393	3																													M	M	M
0511	Heep Laboratory Building																																				
	005821	CHW	mBtu	679,861	514,568	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0512	All Faiths Chapel																																				
	004293	HHW	mBtu	1	38,675	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
0740	McNew Laboratory																																				
	005968	HHW	mBtu	0	26,577	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
880	Small Animal Building																																				
	005958	CHW	mBtu	16,208	31,010	17	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M														
1041	Texas Vet Med Diagnostic Lab																																				
	001539	ELE	kWh	**	77,797	31	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
1502	Heep Center																																				
	002603	HHW	mBtu	149,151	264,274	14				M	M	M	M	M	M	M	M	M	M	M	M	M	M														
1505	Rosenthal Meat Science & Technology Center																																				
	002577	HHW	mBtu	125,856	23,651	30	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	
1512	Southern Crop Improvement Greenhouse																																				
	005931	ELE	kWh	**	83,167	3																				M	M	M									
1519	TX School of Rural Public Health B																																				
	005274	ELE	kWh	**	55,710	31	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1520	TX School of Rural Public Health C																																				
	005275	ELE	kWh	55,710	101,879	29	M	M	M	M	M	M			M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
1900	Texas Institute for Genomic Medicine																																				
	005546	HHW	mBtu	1,480,248	283,624	22					M						M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M

NA: Not available

** See Table II-1 for the original consumption.

Notes: The colored cells means the consumption for the day appears to be problematic. The letter in the colored cell indicates the method for estimation. M: model, F: multiplication factor, L: linear interpolation, A: average, and C: correction of the reset cumulative reading

Rudder Residence Hall (TAMU Bldg #291)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	002132	31	10/1/2016 – 10/31/2016	Model
HHW	002136	31	10/1/2016 – 10/31/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The consumption level is higher than the level during the past year.	8/13/2016 – Ongoing
HHW	The consumption level is higher than the level during the past year.	8/13/2016 – Ongoing

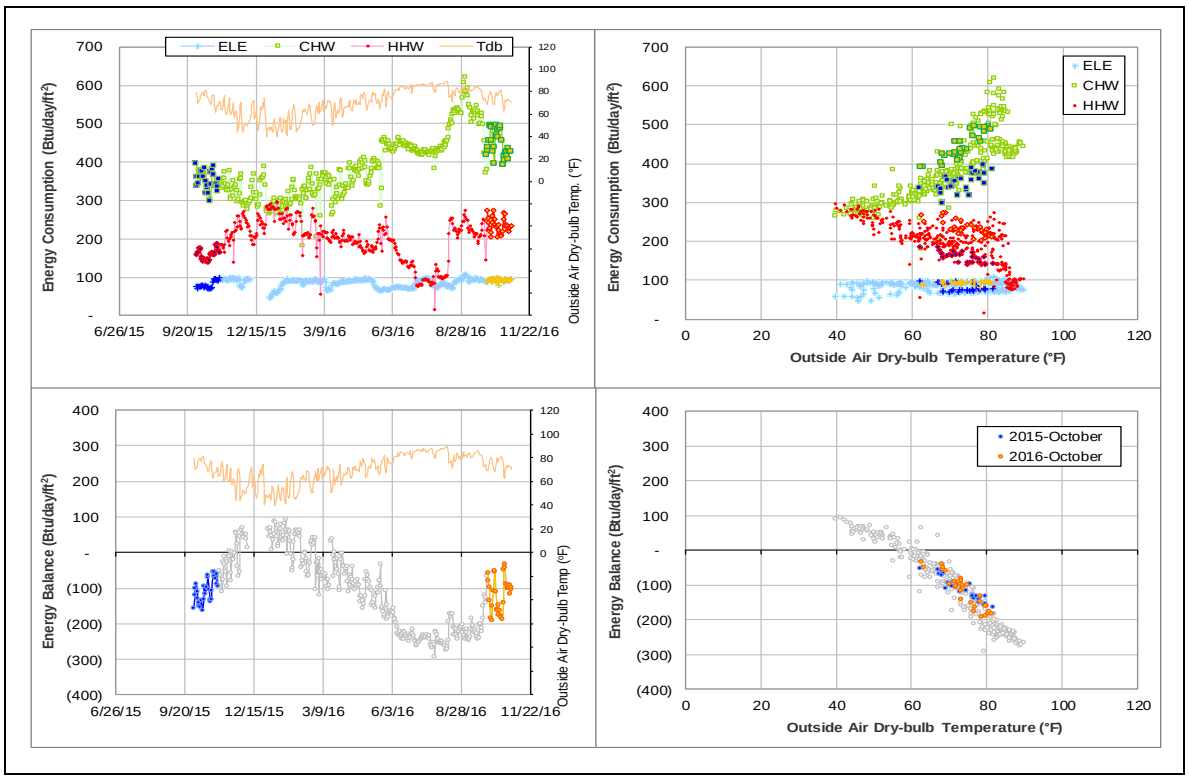
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
CHW	002132	8/14/2016 – 9/7/2016	Flow Rate	High
		9/8/2016 – Ongoing	Flow Rate	Low
			Delta-T	High
HHW	002136	8/14/2016 – 9/7/2016	Flow Rate	High
			Delta-T	High
		8/30/2016 – Ongoing	Flow Rate	High
			Delta-T	Low

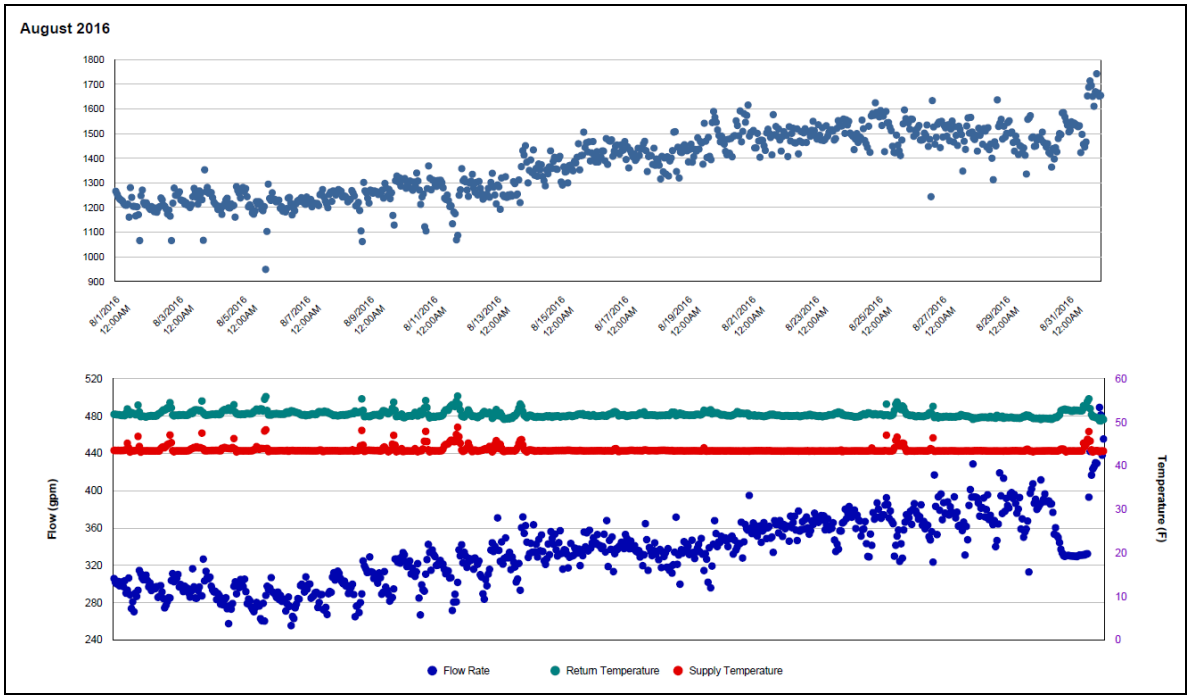
Quantitative descriptions and comments

Both CHW and HHW increased to a level significantly higher than last year. CHW saw a gradual increase in flow rate starting 8/13/2016 from circa 300 gpm to circa 460 gpm and pulled the consumption up by more than 150 Btu/day-sf higher than last year. Although The flow rate dropped down to 320 gpm on 9/7/2016, Delta-T had a simultaneous increase which retained the high consumption level with only a 50 Btu/day-sf decrease. In the meantime, HHW saw a rapid two-step increase on 8/14/2016 by more than 100 Btu/day-sf with increase in both flow rate (35 to 50 gpm) and Delta-T. The flow rate started to further increase on 8/30 and reached 110 gpm on 9/1/2016, but Delta-T decreased accordingly so the consumption did not have significant change. Models are used to estimate the consumption of these periods. See also section II-3.

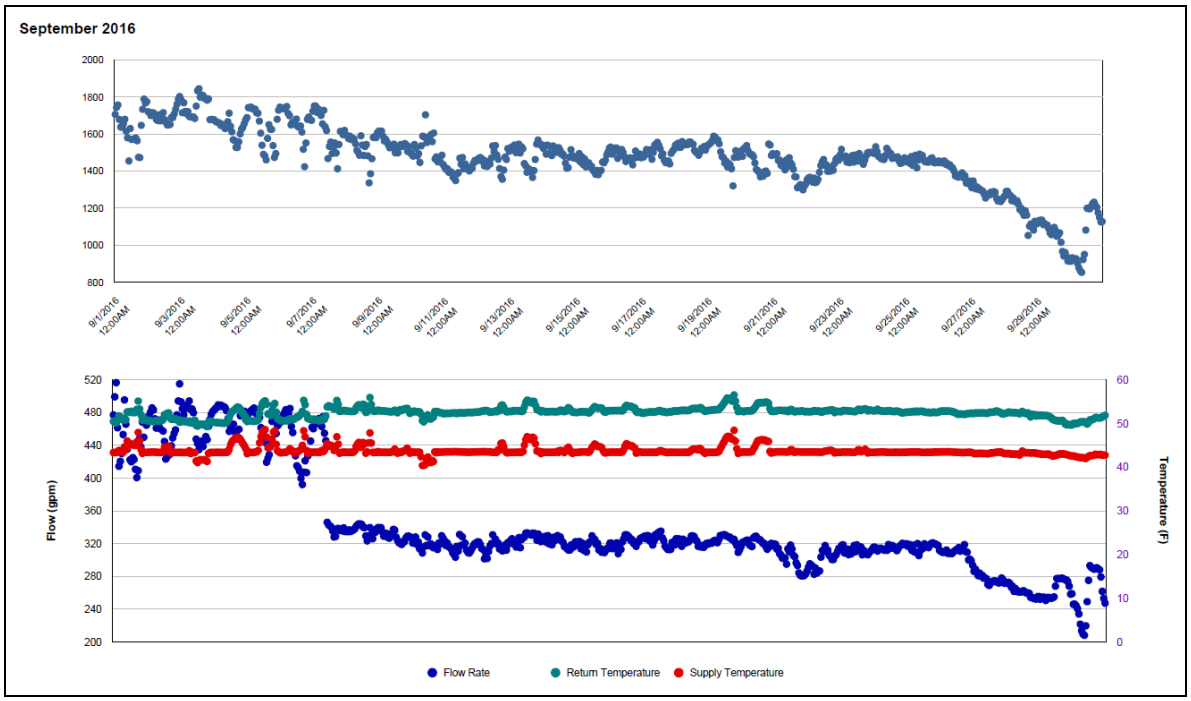
Explanatory Figure: 13 months energy balance plot with original data



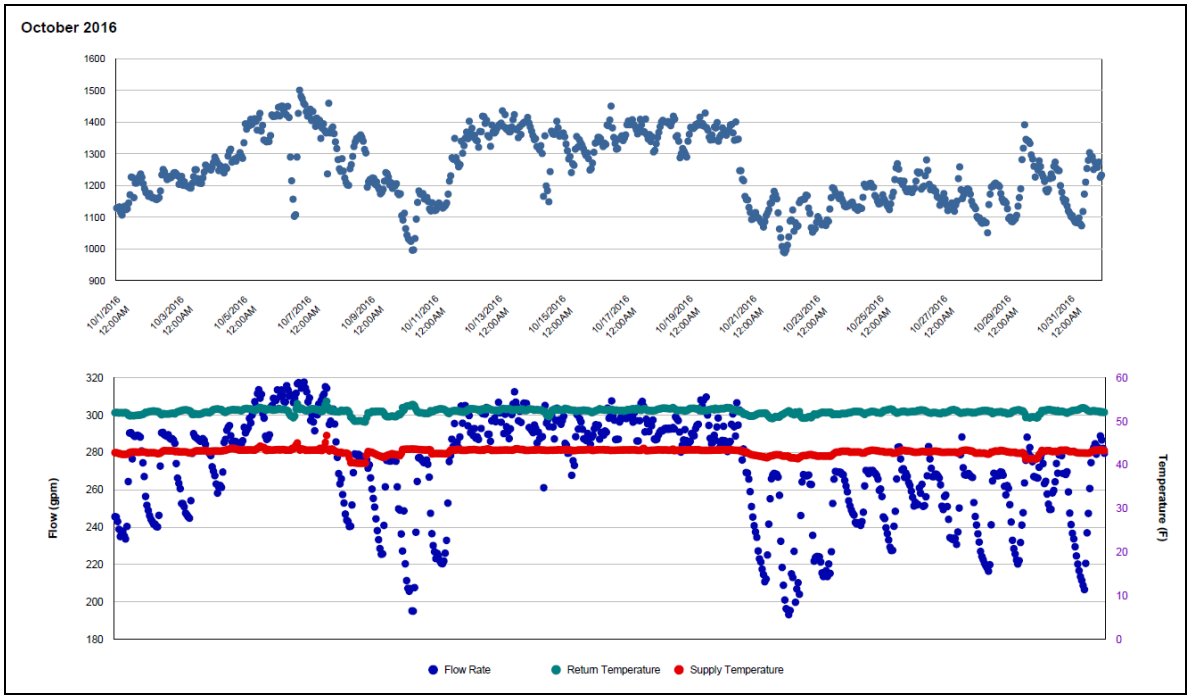
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (CHW during August 2016)



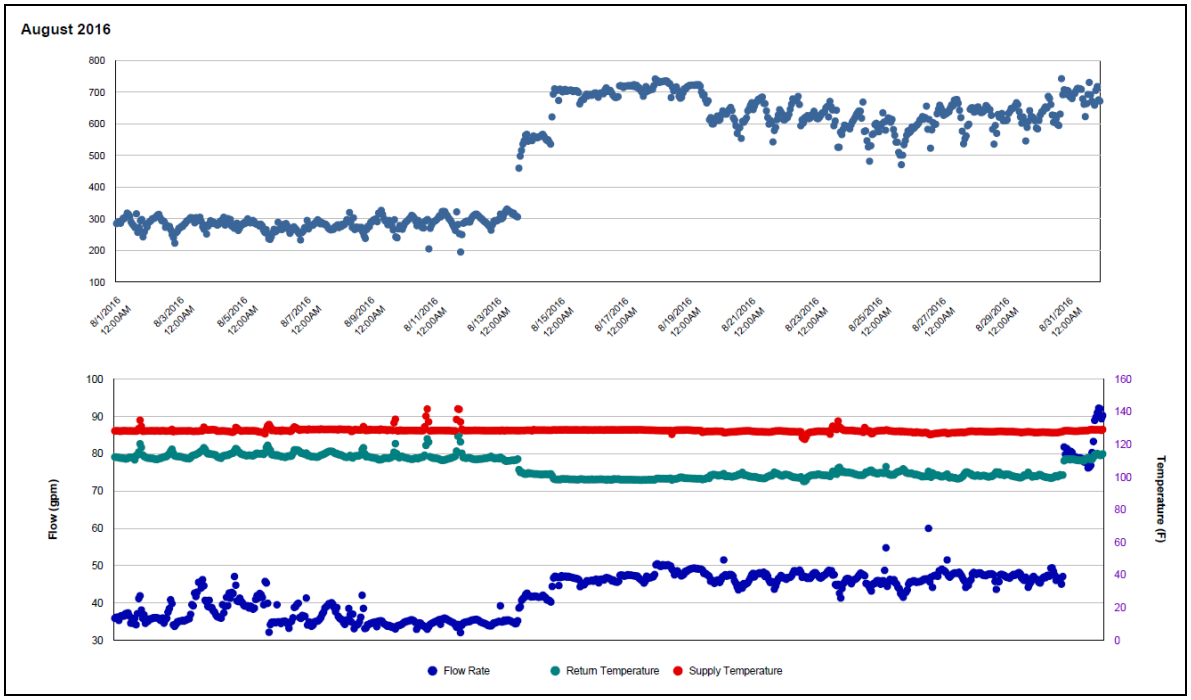
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (CHW during September 2016)



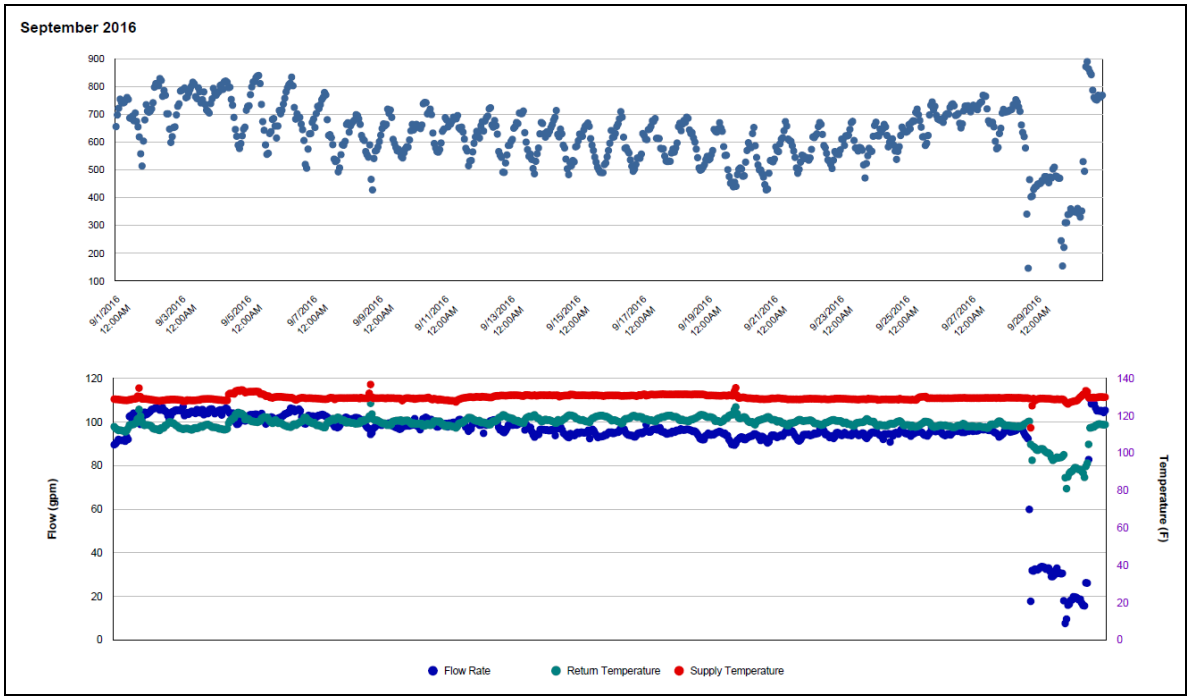
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (CHW during October 2016)



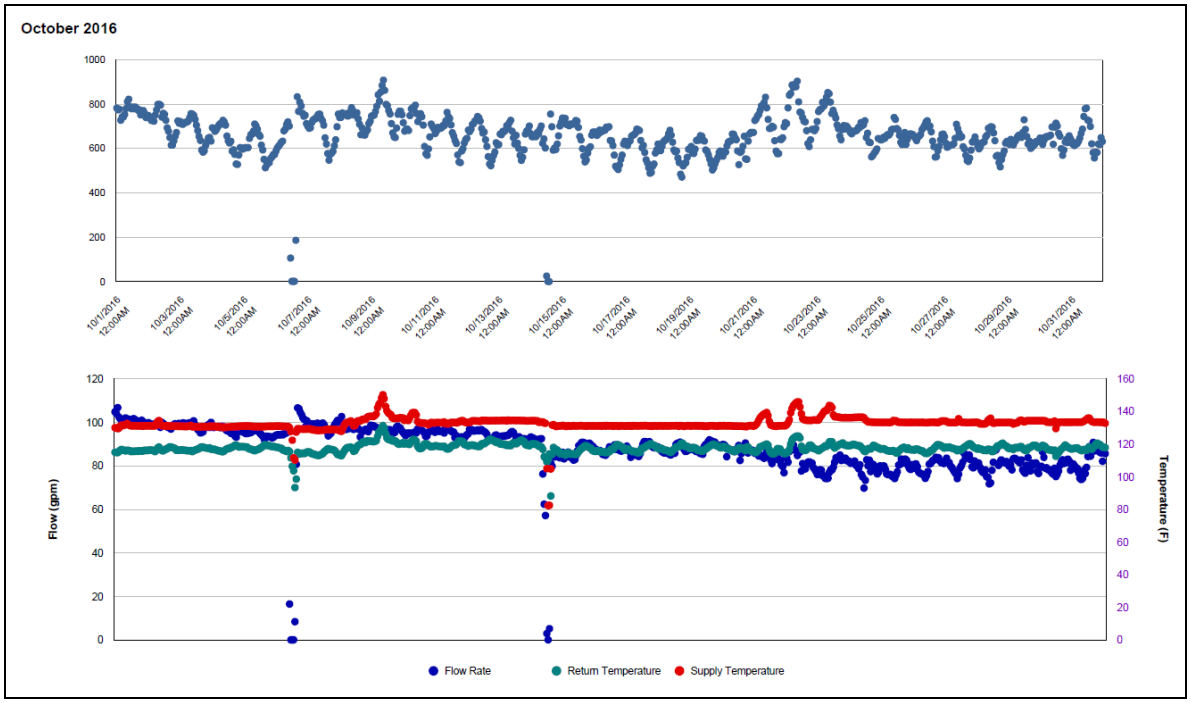
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during August 2016)



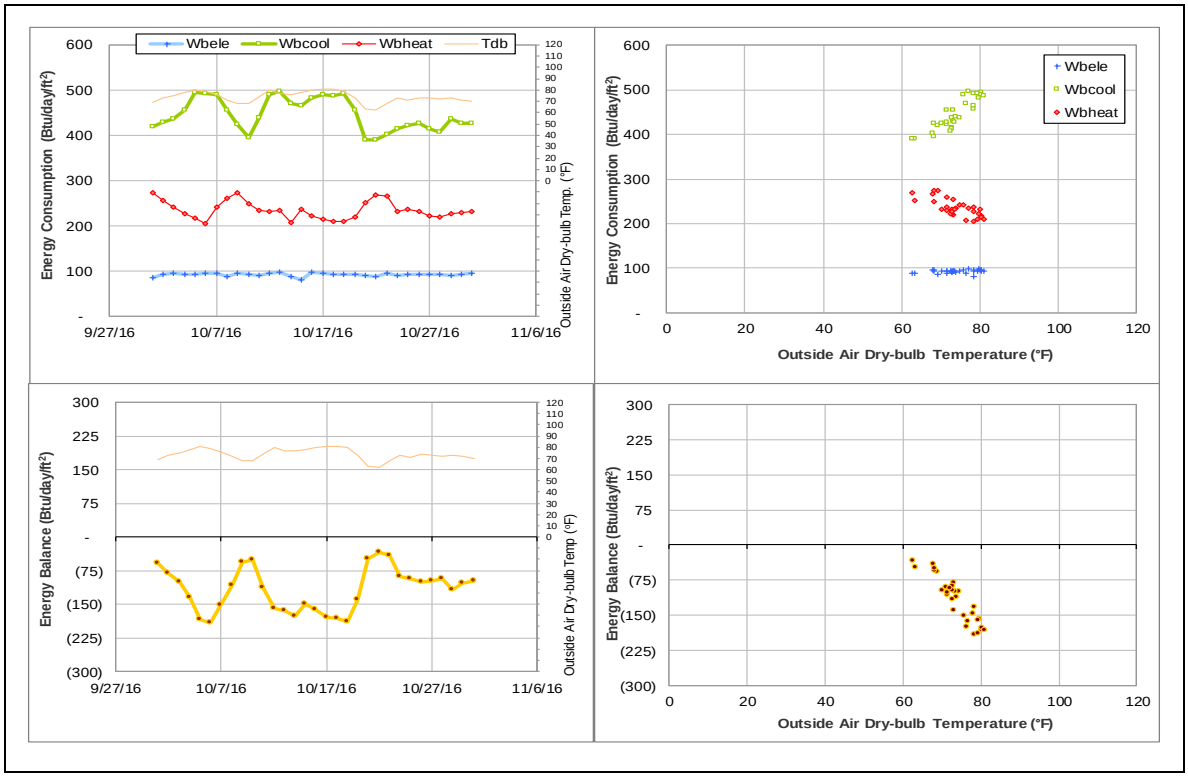
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during September 2016)



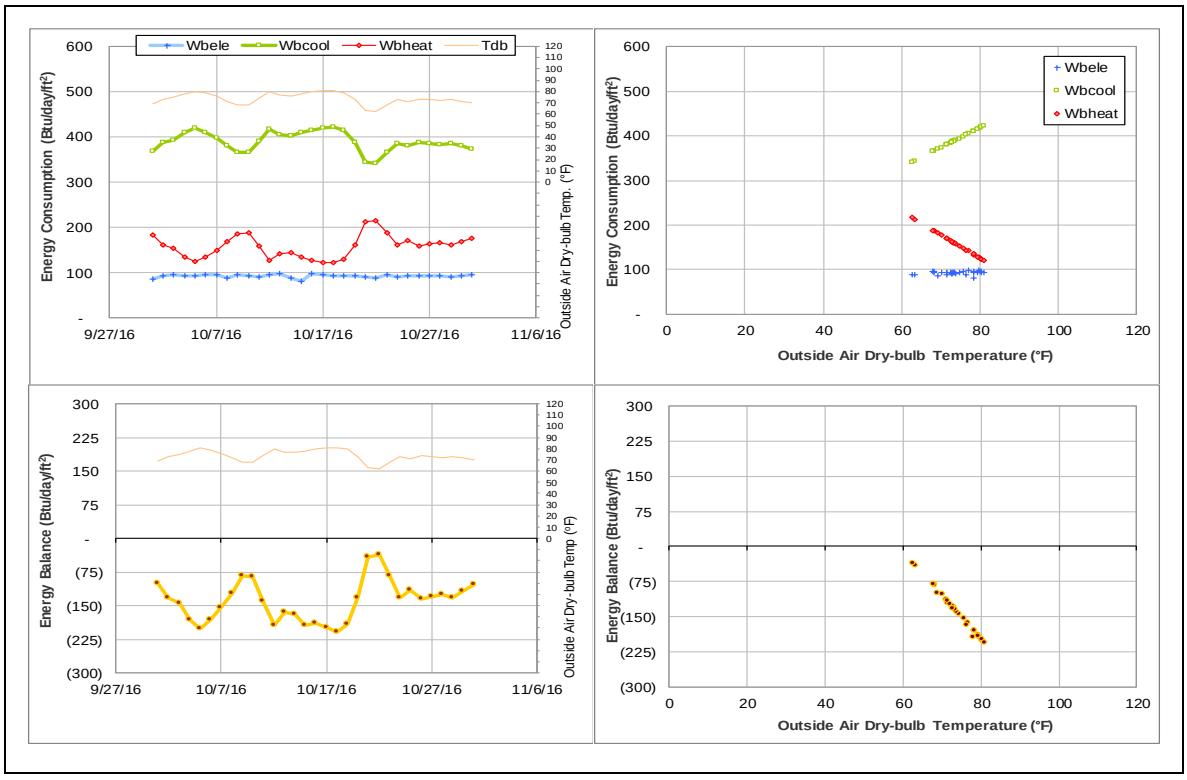
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during October 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis.



Eppright Residence Hall (TAMU Bldg #292)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	002266	11	10/14/2016 – 10/24/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The consumption dropped for a short period.	10/14/2016 – 10/24/2016

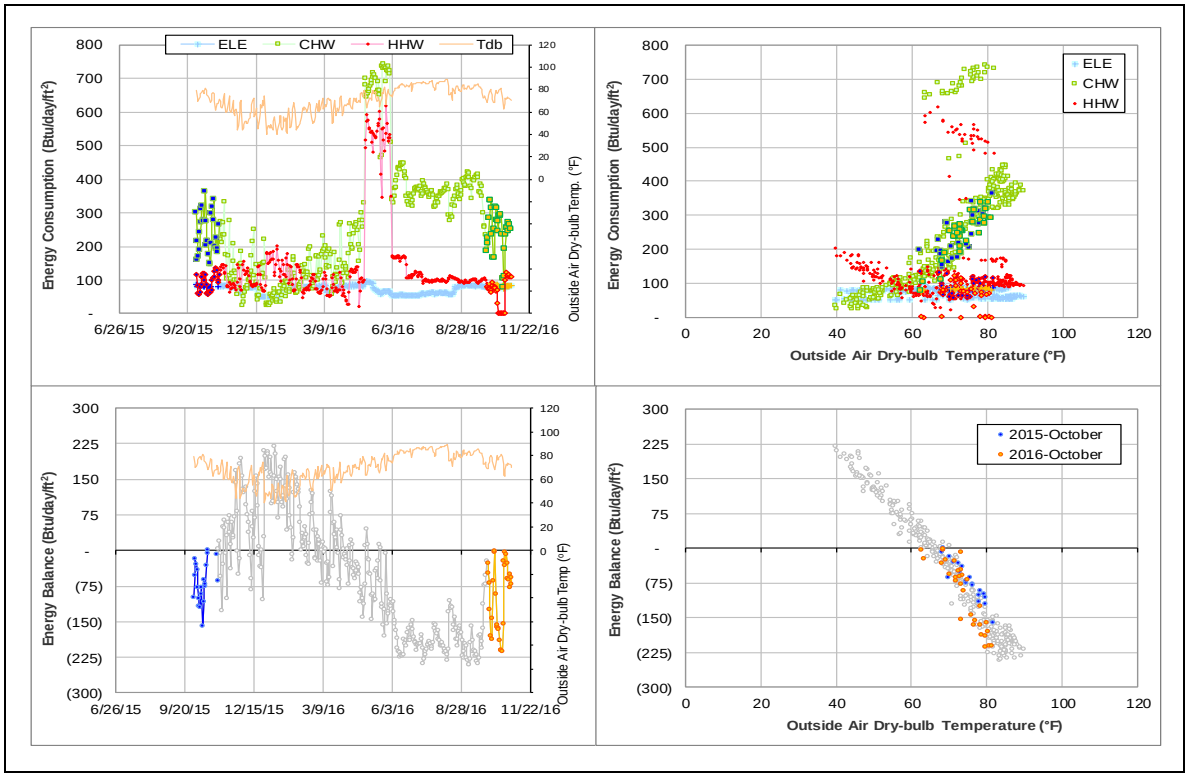
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	002266	10/14/2016 – 10/24/2016	Flow Rate	Zero

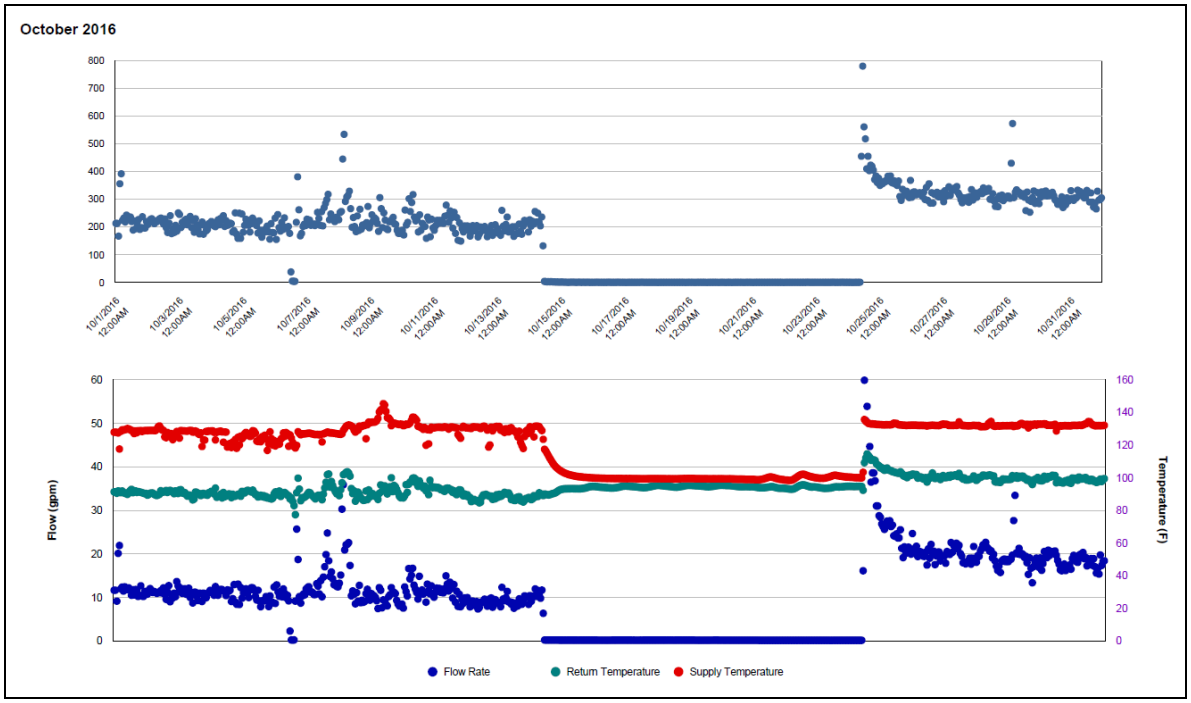
Quantitative descriptions and comments

The flow rate of HHW dropped to zero during 10/14 – 10/24/2016. The consumption is estimated by a model.

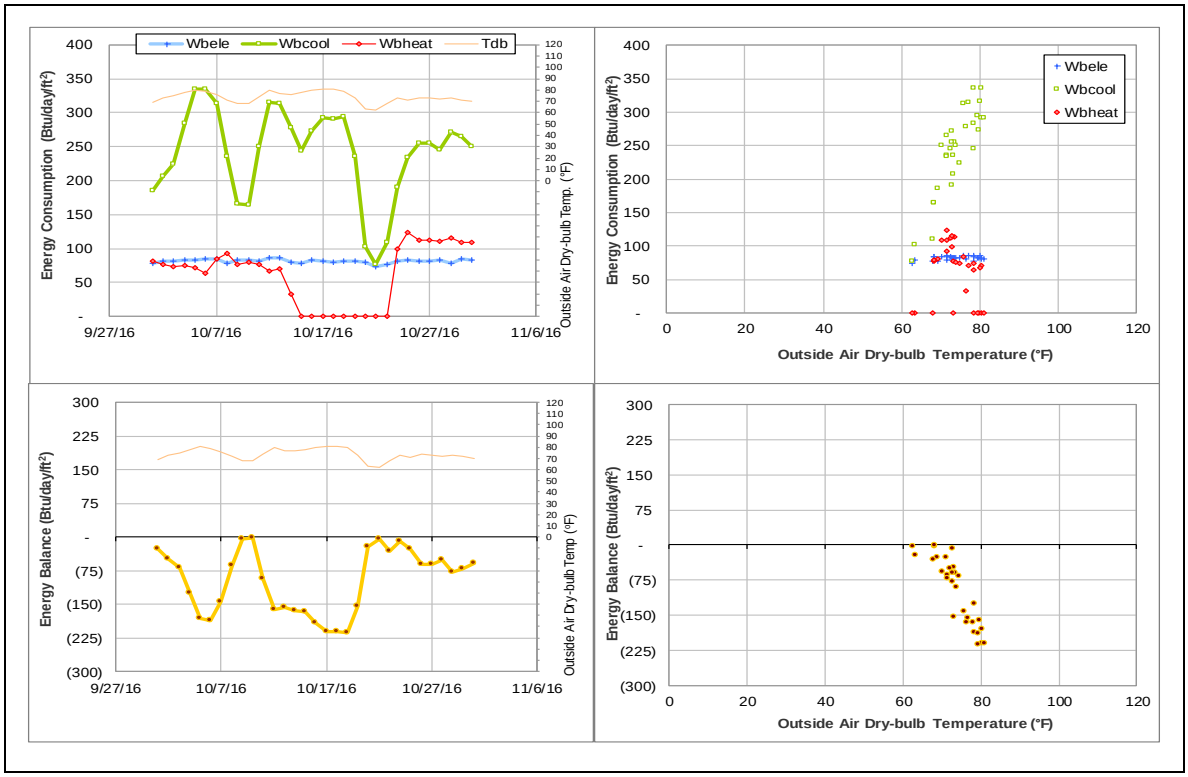
Explanatory Figure: 13 months energy balance plot with original data



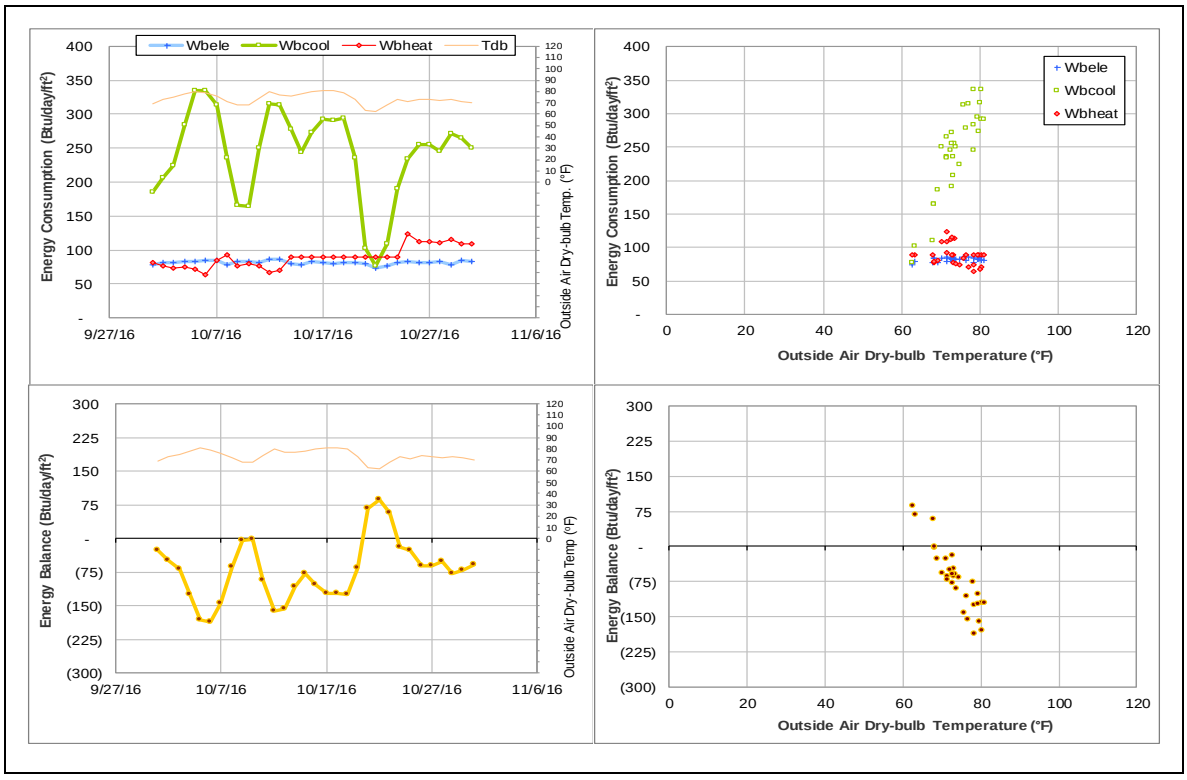
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during October 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis.



Chemistry Building Addition (TAMU Bldg #376)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	007119	31	10/1/2016 – 10/31/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The consumption level is increasing gradually.	8/11/2016 – 8/15/2016
	The metered values appear to be faulty.	8/22/2016 – 10/31/2016

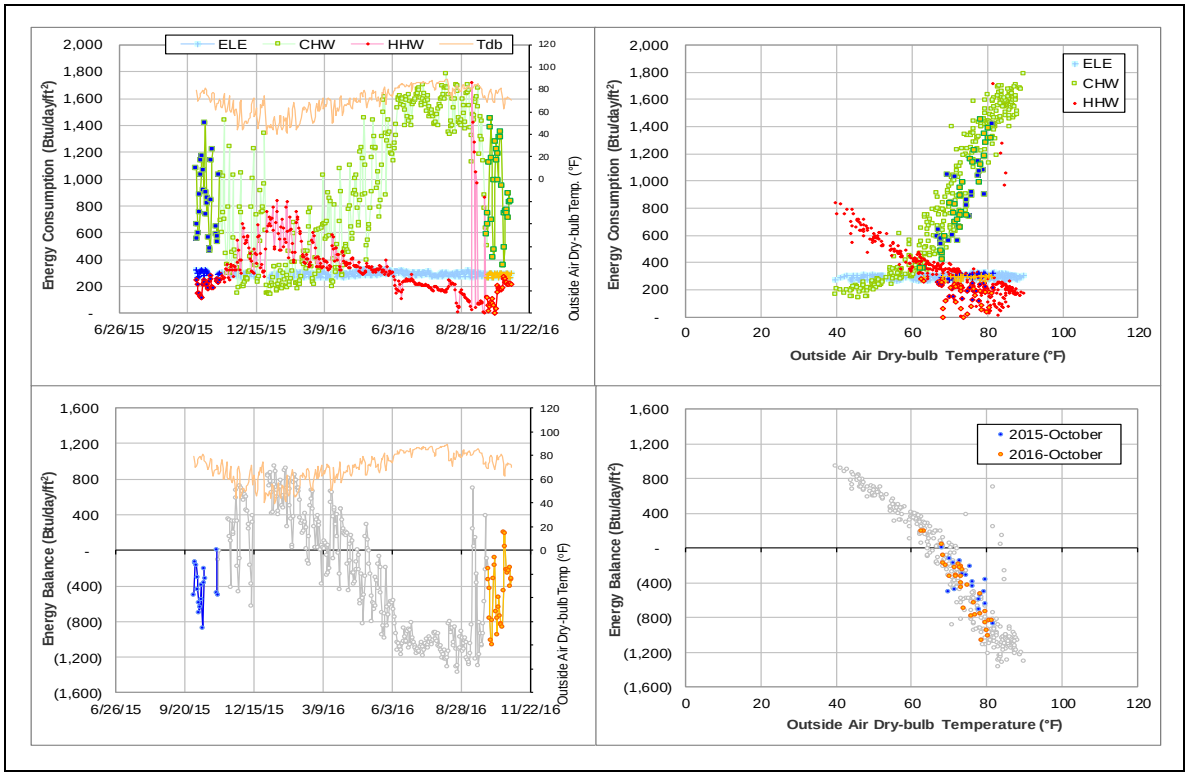
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	007119	8/11/2016 – 8/15/2016	Flow Rate	High
		8/12/2016 – 10/31/2016	Supply Temp and/or Return Temp	Faulty

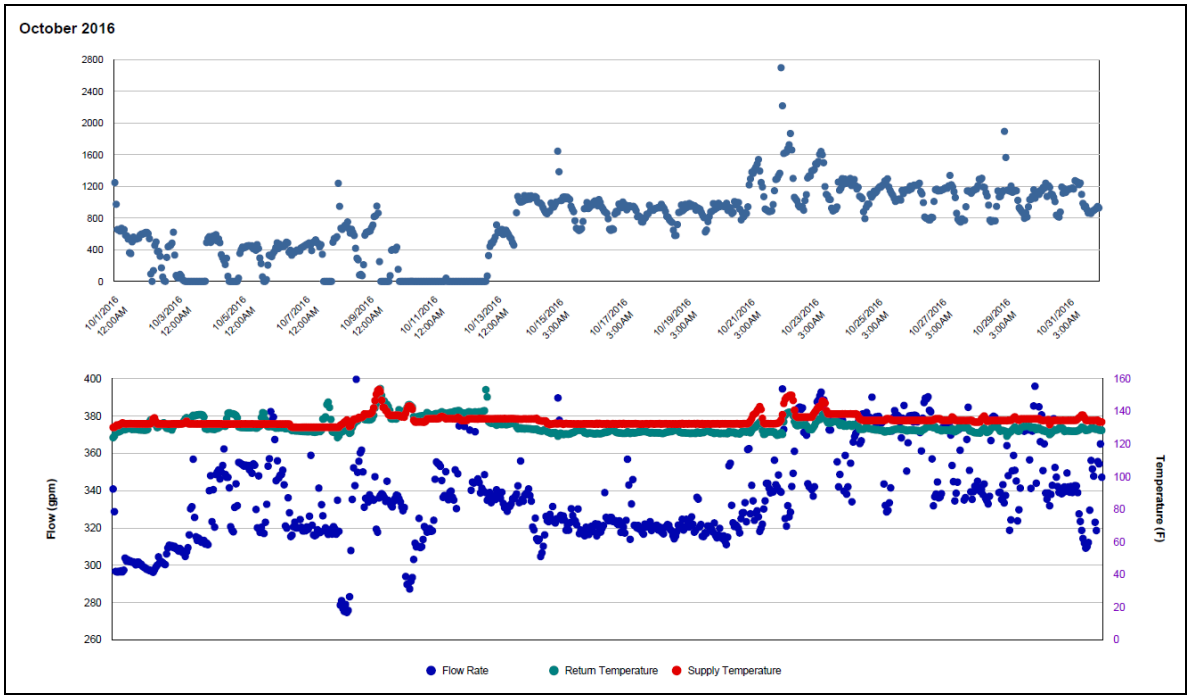
Quantitative descriptions and comments

Starting 8/12/2016, the temp readings for HHW meter have faulty. Obviously erroneous values and negative Delta-T can be observed during this period. The consumption calculation is based on these faulty values, therefore the whole month is estimated by a model.

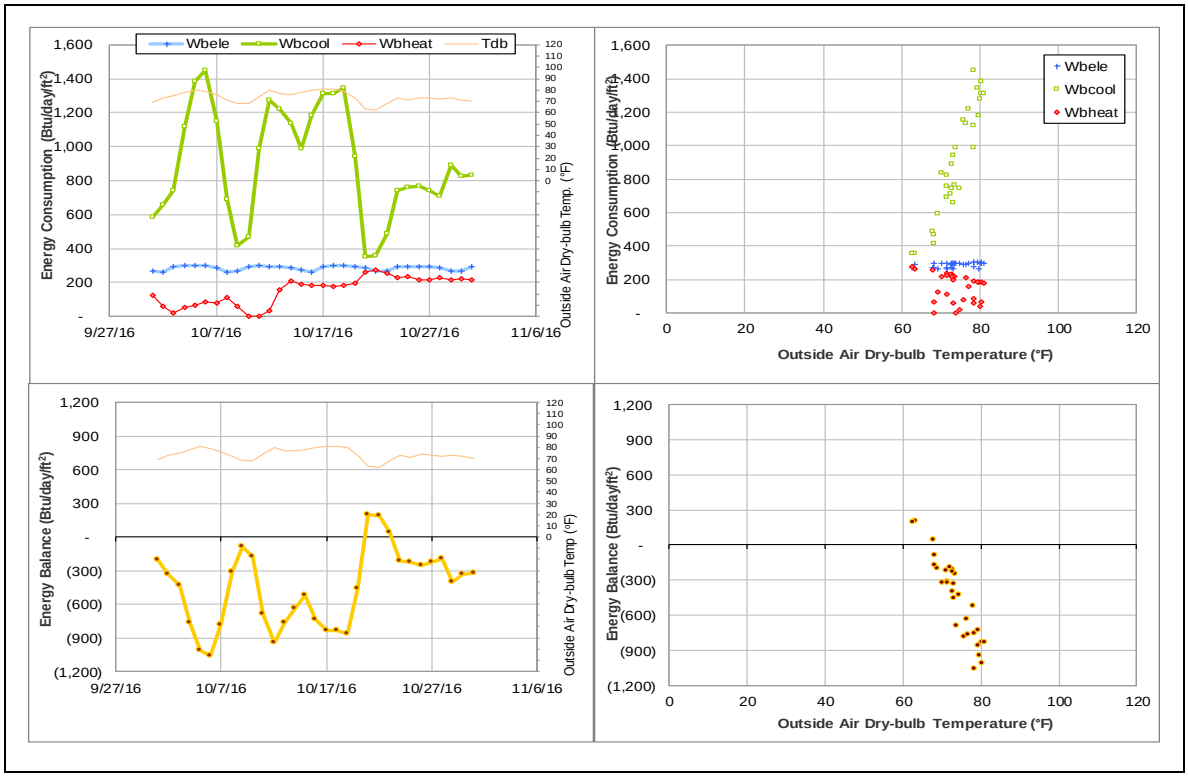
Explanatory Figure: 13 months energy balance plot with original data



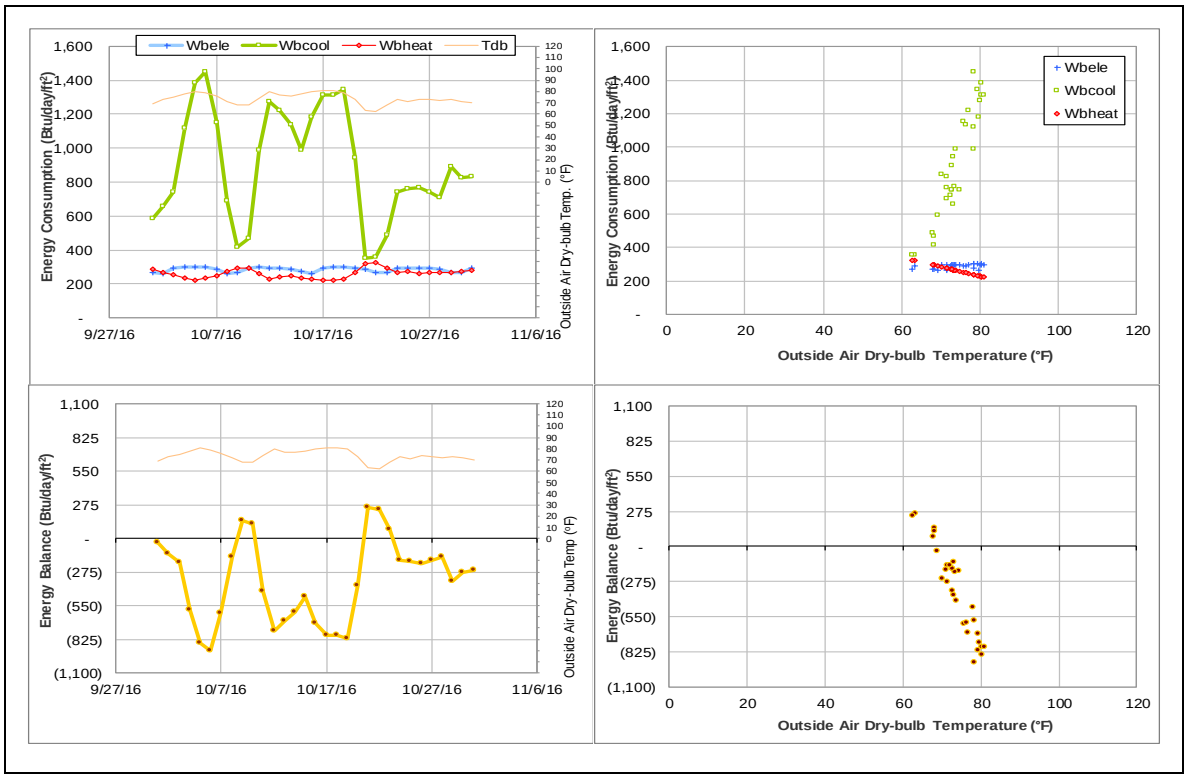
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during October 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis.



Buzbee Leadership Learning Center (TAMU Bldg #1402)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	007725	31	10/1/2016 – 10/31/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The consumption level has increased suddenly.	8/5/2016 – ongoing

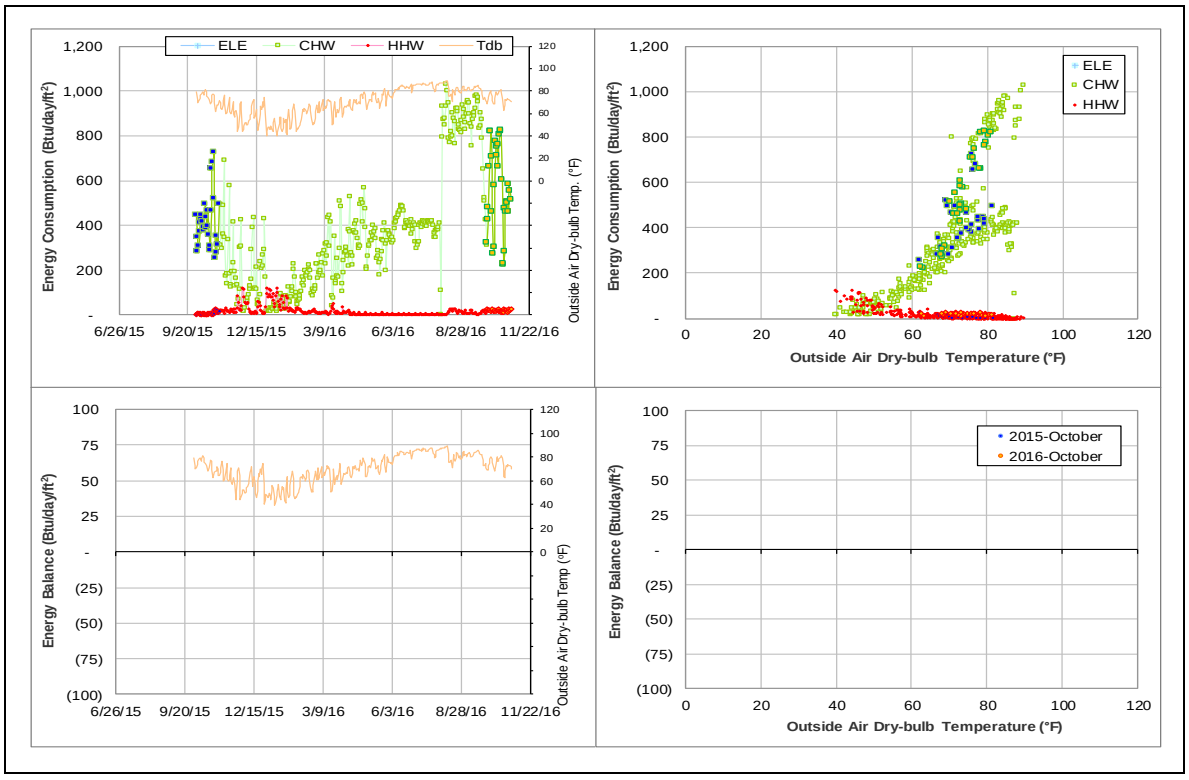
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
CHW	007725	8/3/2016 – 8/5/2016	Flow Rate	Zero
		8/5/2016 – 10/31/2016	Flow Rate	High

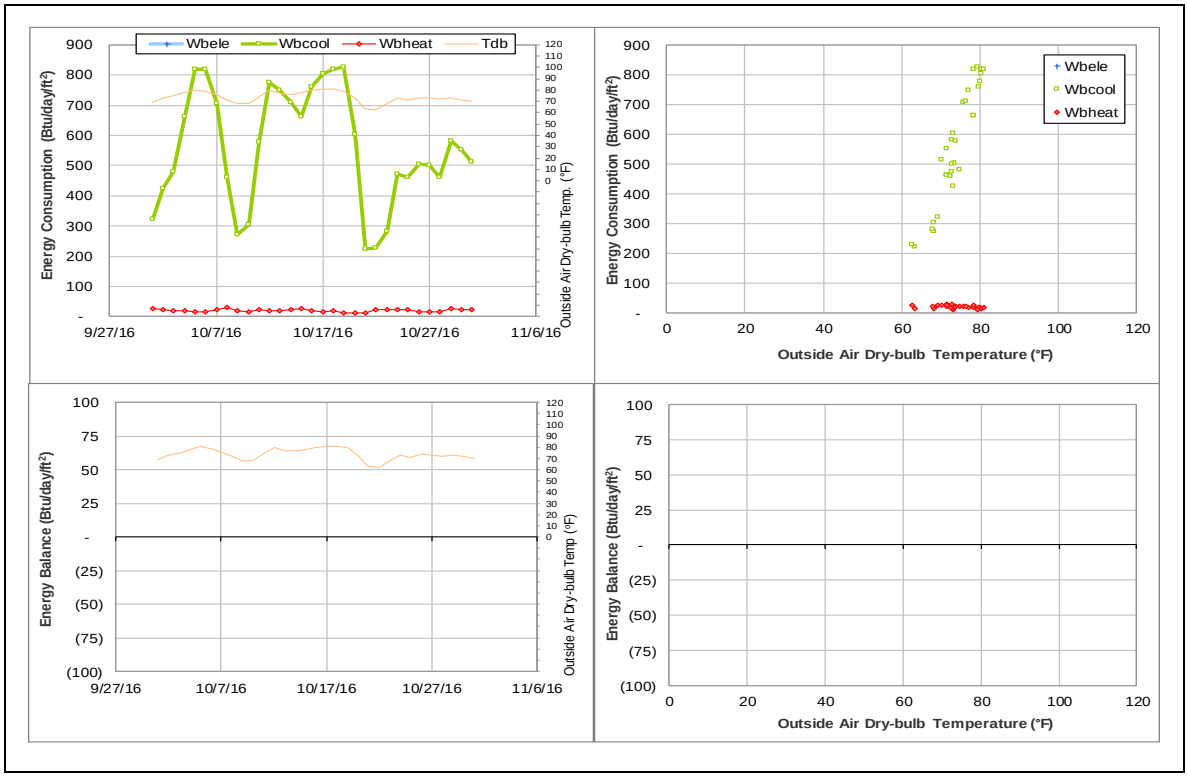
Quantitative descriptions and comments

After a short period of shut down on 8/3 – 8/5/2016, CHW drastically increased from 300 Btu/day-sf to 650 Btu/day-sf due to a flow rate increase from 40 gpm to 110 gpm. A new pattern seems to be forming and more data are needed for verification. The whole month consumption is estimated by a model.

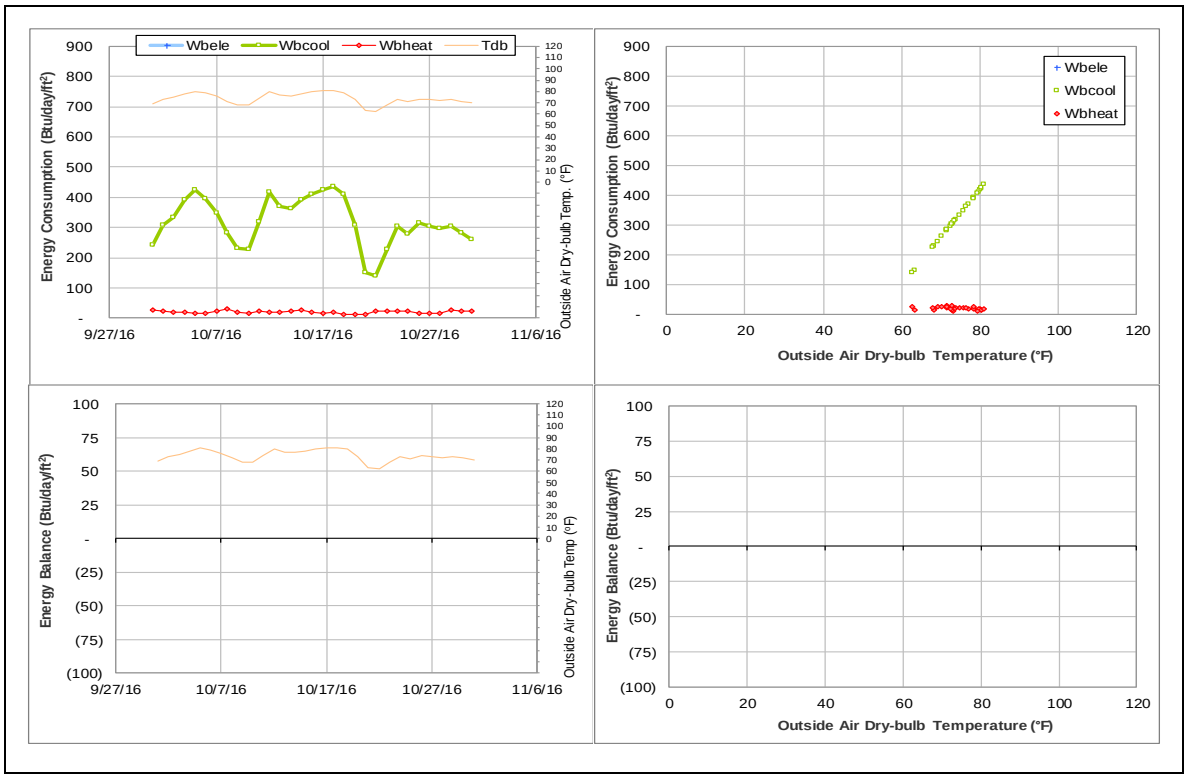
Explanatory Figure: 13 months energy balance plot with original data



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis.



Krueger Residence Hall (TAMU Bldg #441)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	002500	26	10/4/2016 – 10/21/2016 10/24/2016 – 10/31/2016	Average

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The metered values appear to be faulty.	8/1/2016 – Ongoing

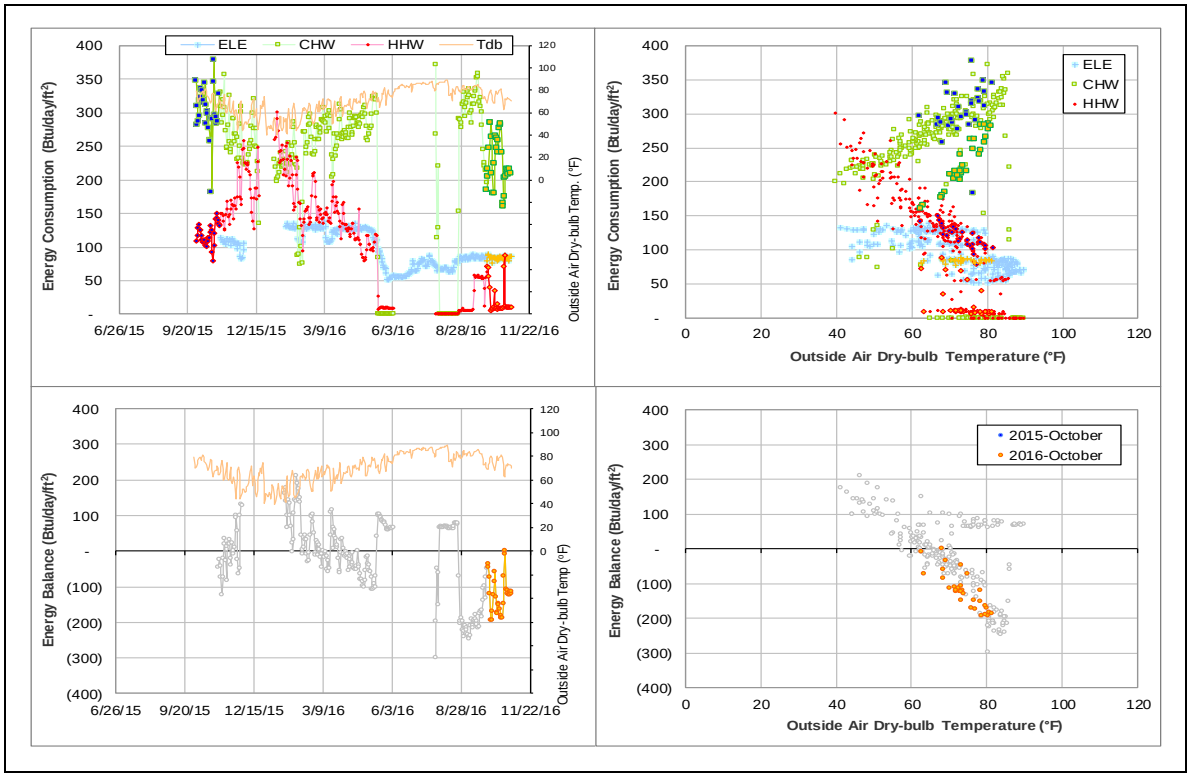
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	002500	8/1/2016 – 8/26/2016	Flow rate, Return temperature, Supply temperature	Constant
		8/27/2016 – 10/31/2016	Flow Rate	Occasionally constant

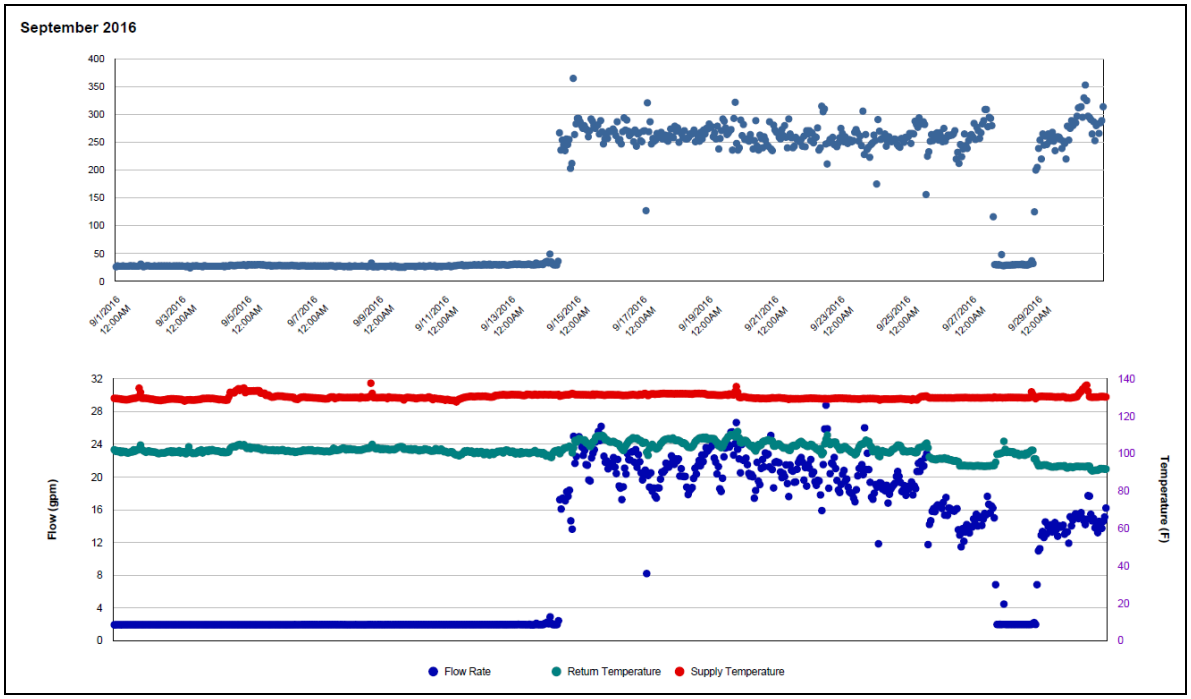
Quantitative descriptions and comments

HHW flow rate readings have seemingly constant values occasionally. Both CHW and HHW have decreased to a much lower level after a previous missing and faulty period therefore the old baseline is not used for estimation. The days containing constant flow rate readings are estimated by taking average of current month available data. See also II-3.

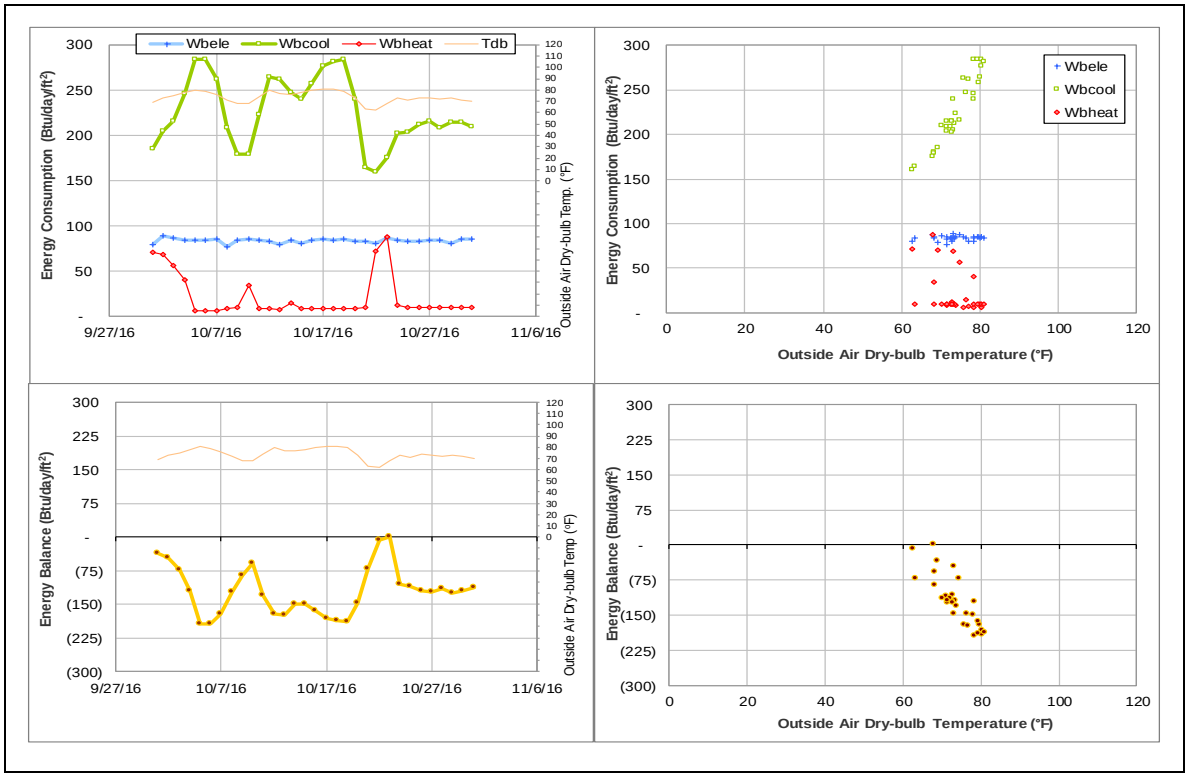
Explanatory Figure: 13 months energy balance plot with original data.



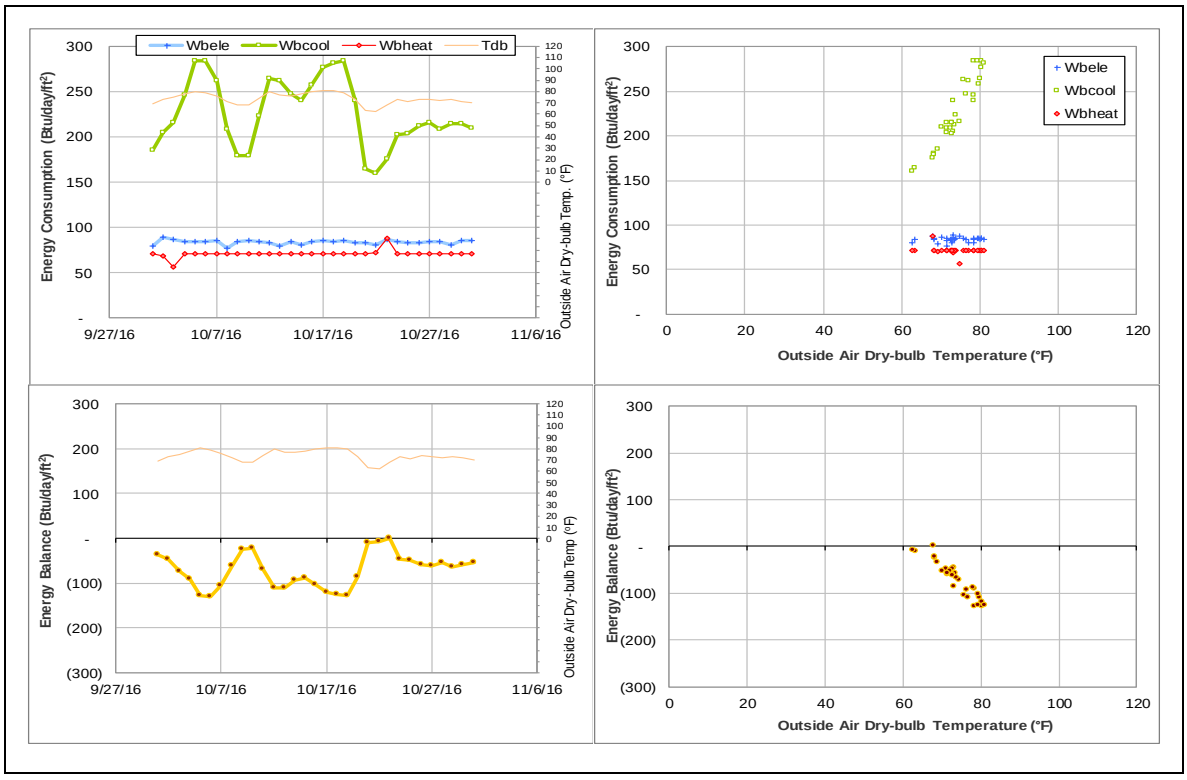
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during October 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis.



Oceanography & Meteorology Building (TAMU Bldg #443)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	006388	31	10/1/2016 – 10/31/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The metered values appear to be faulty.	10/1/2016 – Ongoing

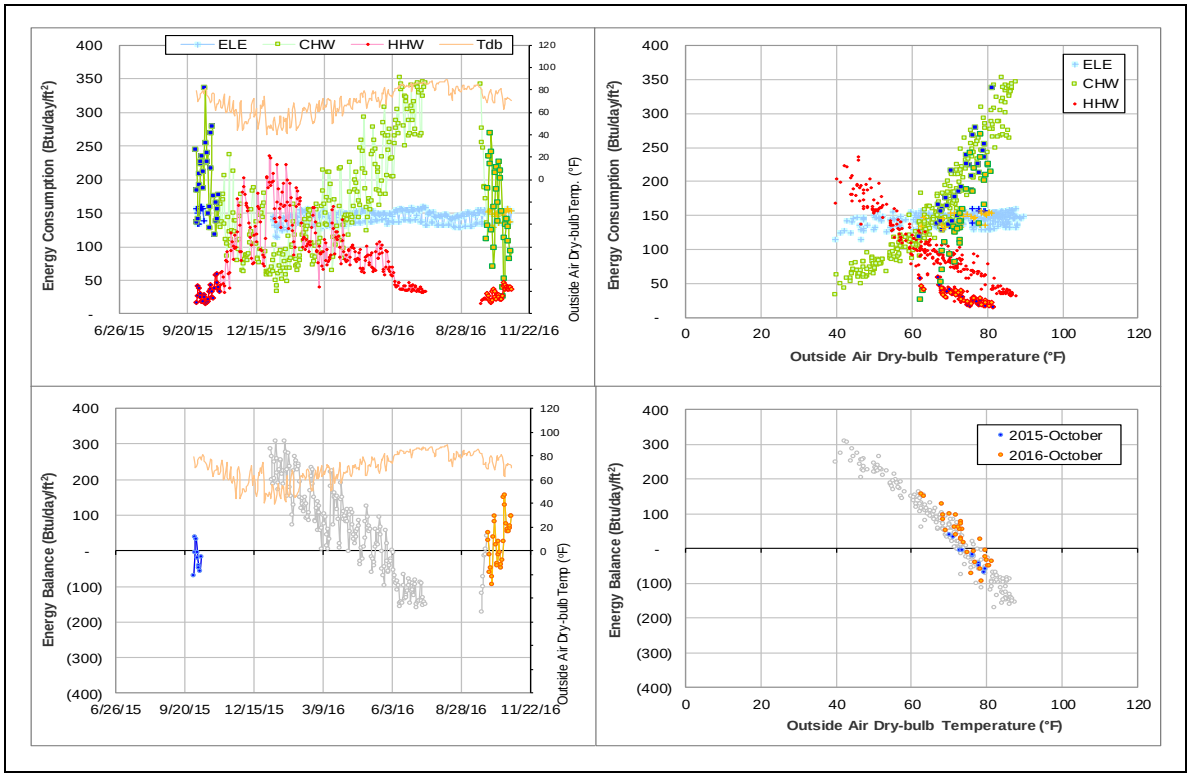
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
CHW	006388	10/1/2016 – 10/31/2016	Delta-T	Contains negative

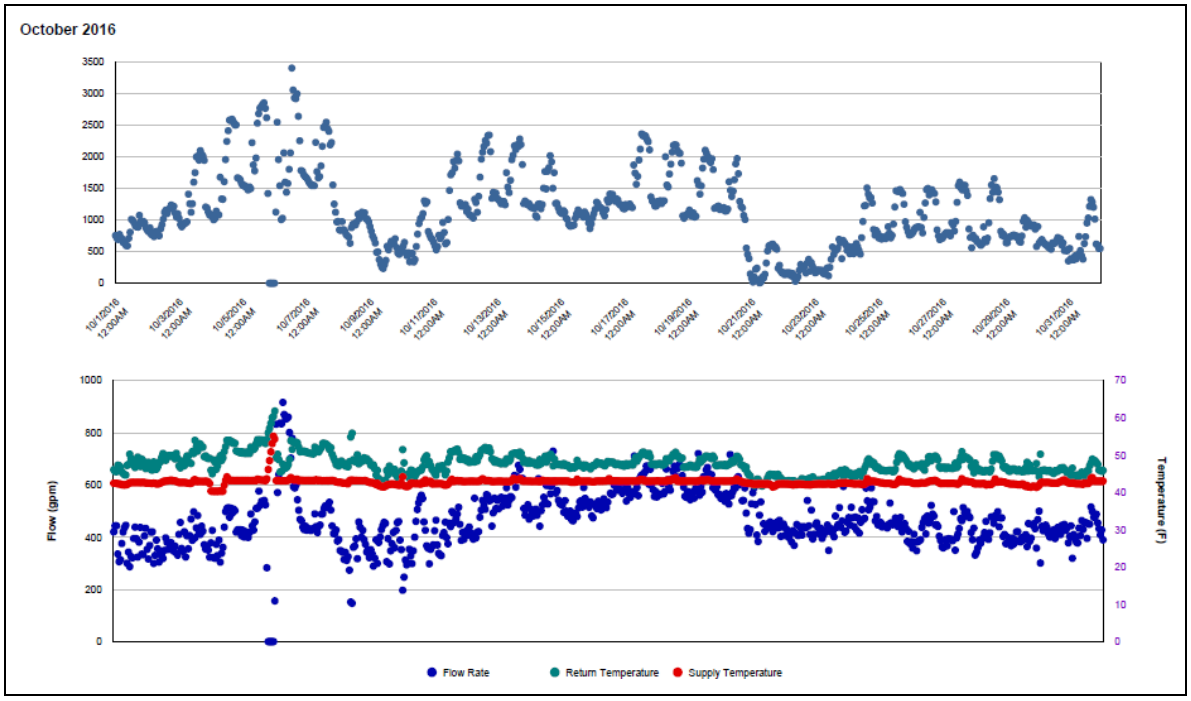
Quantitative descriptions and comments

CHW temperature difference appear to contain negative values during 10/21 – 10/25/2016. This renders the whole set of data questionable. The whole month is estimated by a model. See also section II-3.

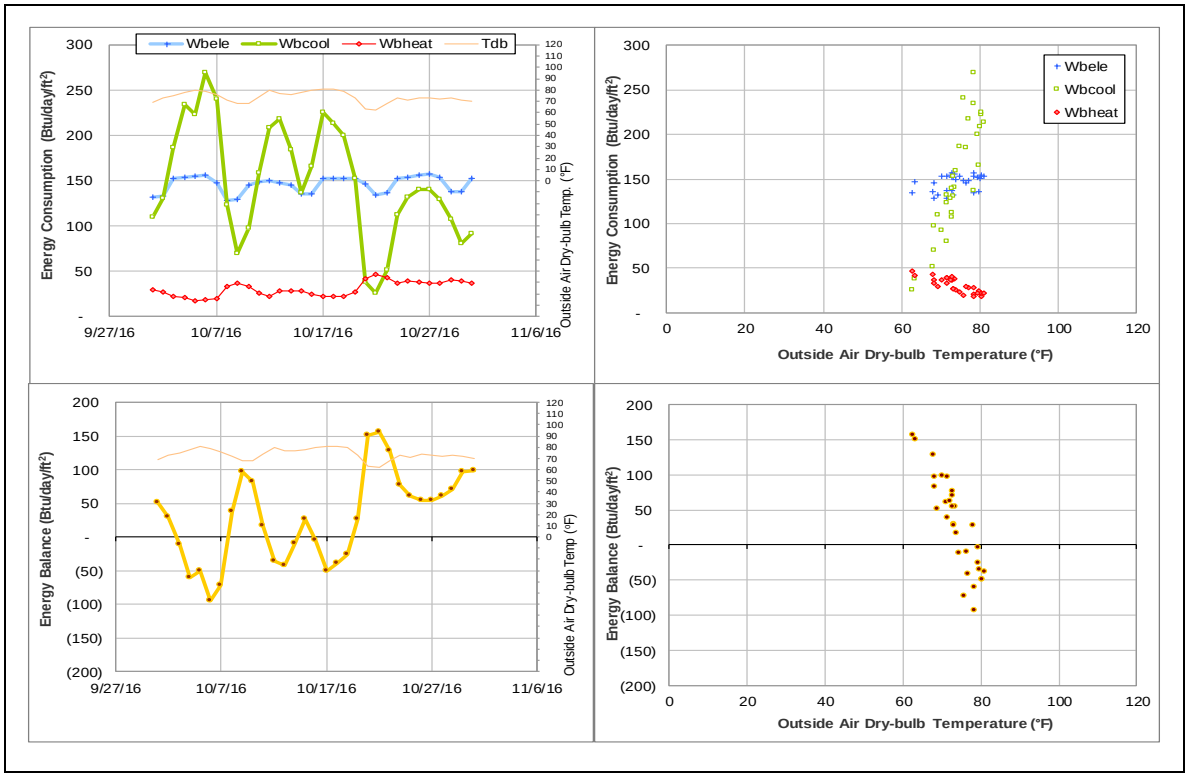
Explanatory Figure: 13 months energy balance plot with original data.



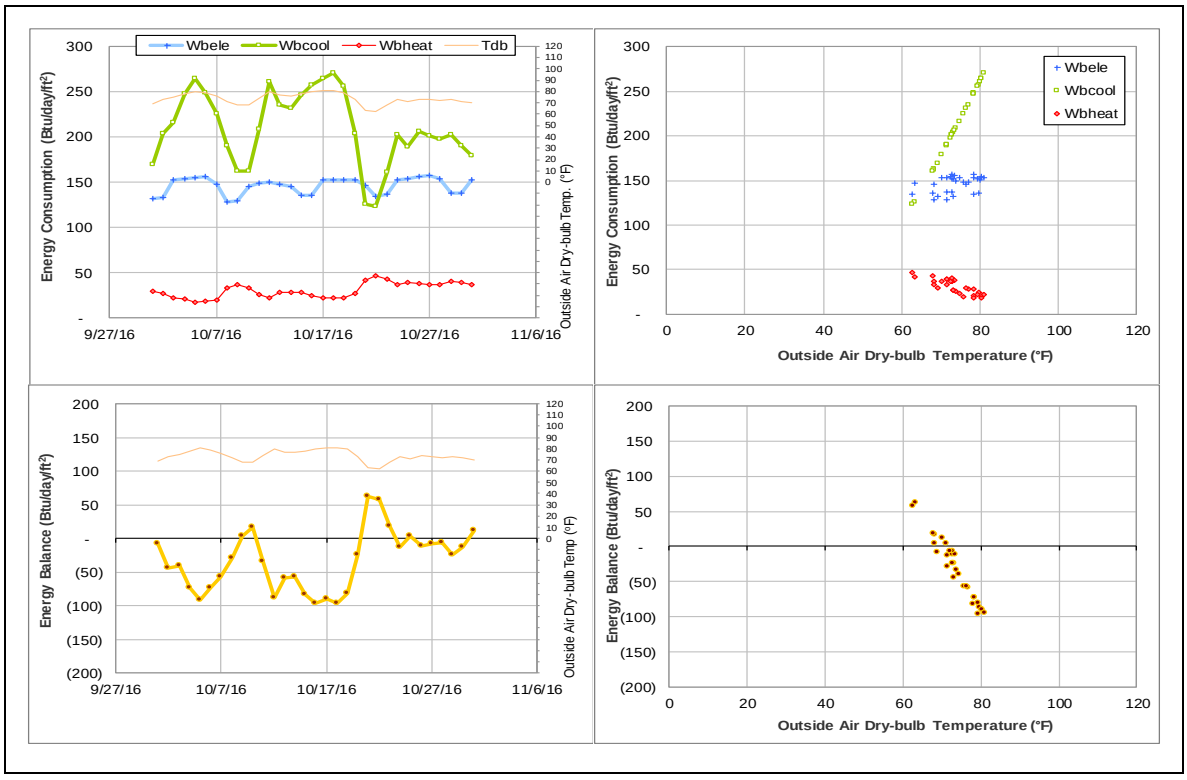
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (CHW during October 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis.



Peterson Building (TAMU Bldg #444)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	006435	14	10/1/2016 – 10/14/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The metered values appear to be faulty.	9/22/2016 – 10/14/2016

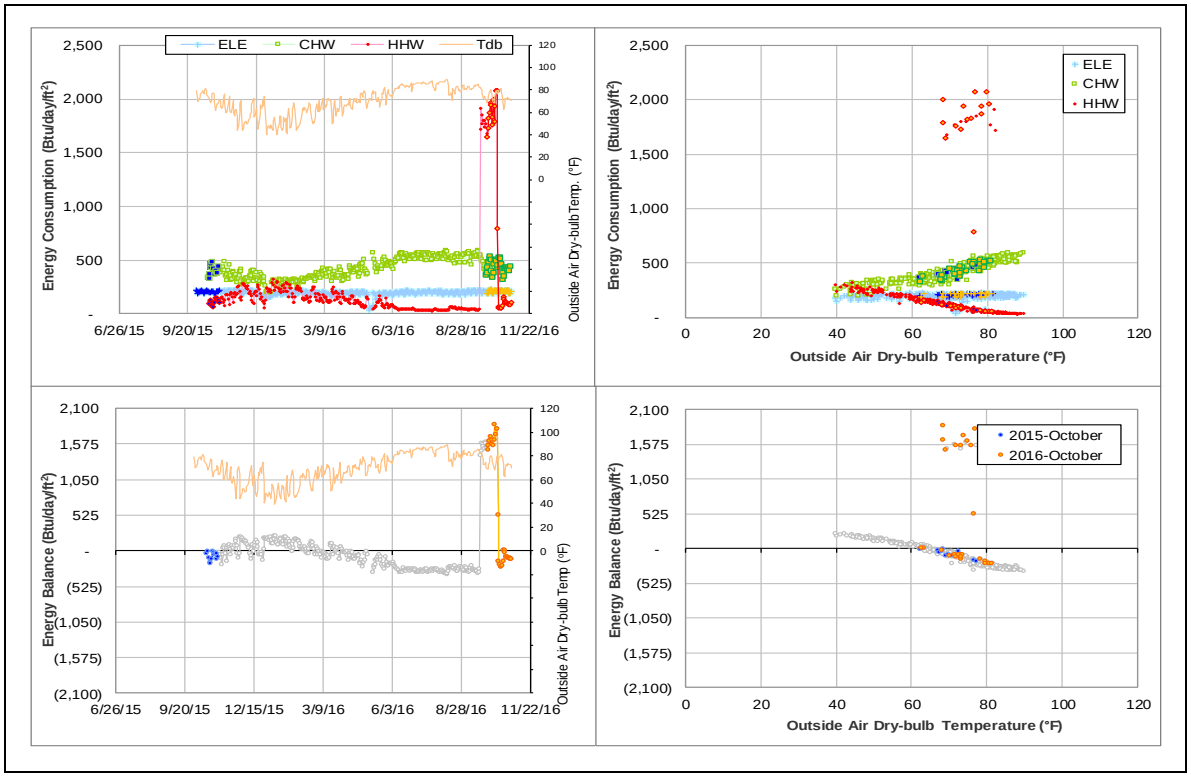
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	006435	9/22/2016 – 10/14/2016	Flow Rate	Constant and very high

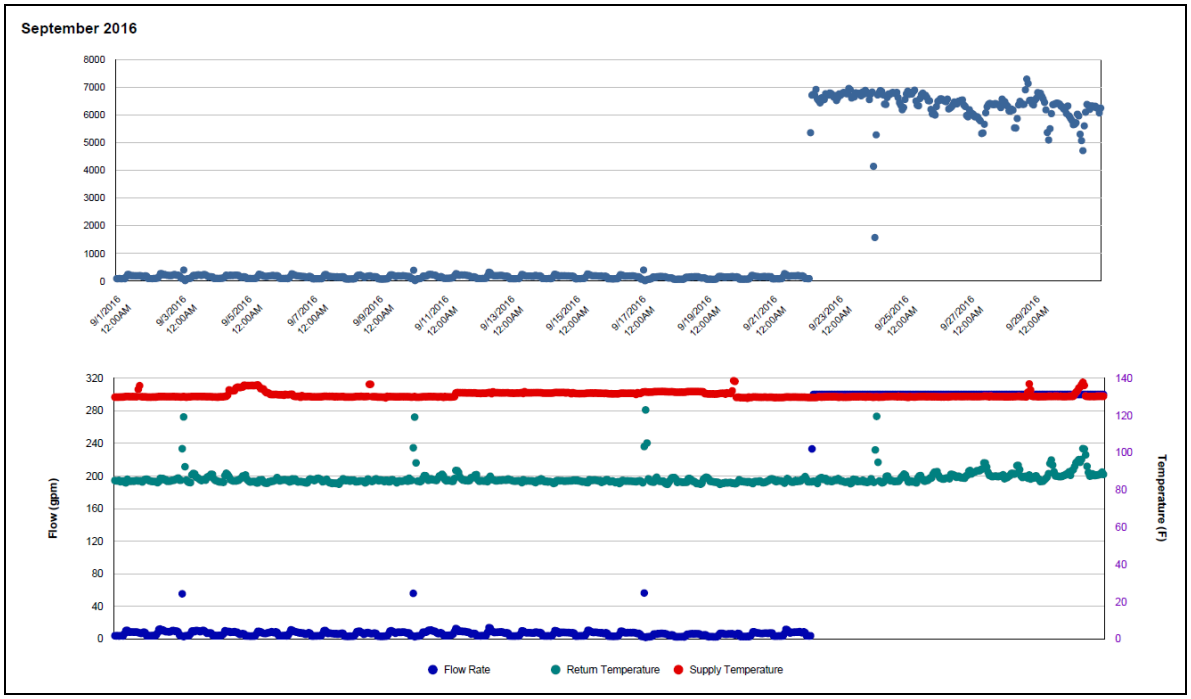
Quantitative descriptions and comments

HHW flow rate readings are constant during 9/22/2016 – 10/14/2016. The consumption is estimated by a model.

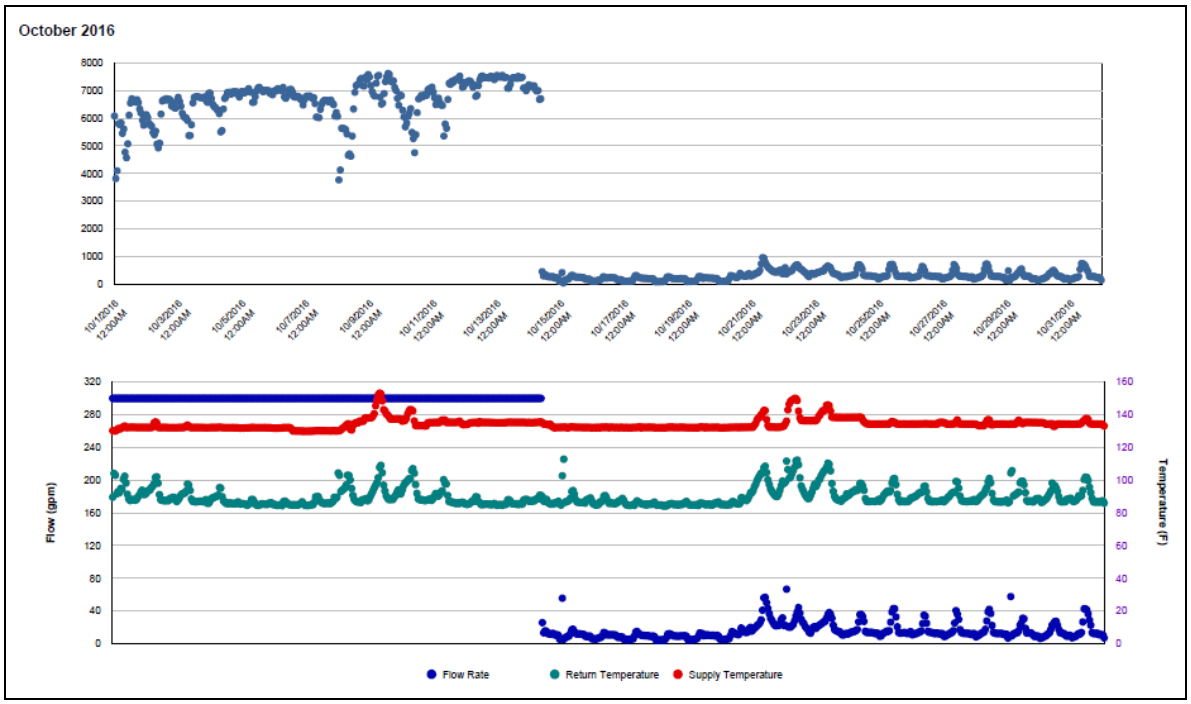
Explanatory Figure: 13 months energy balance plot with original data.



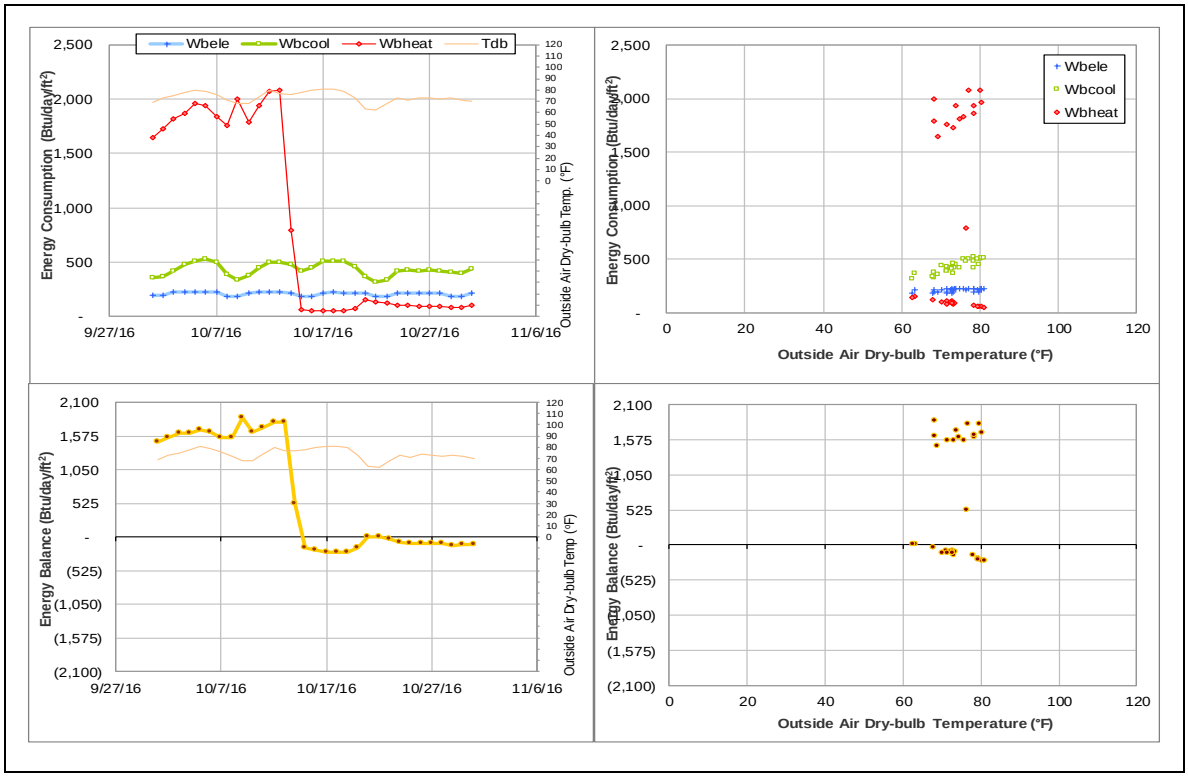
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during September 2016)



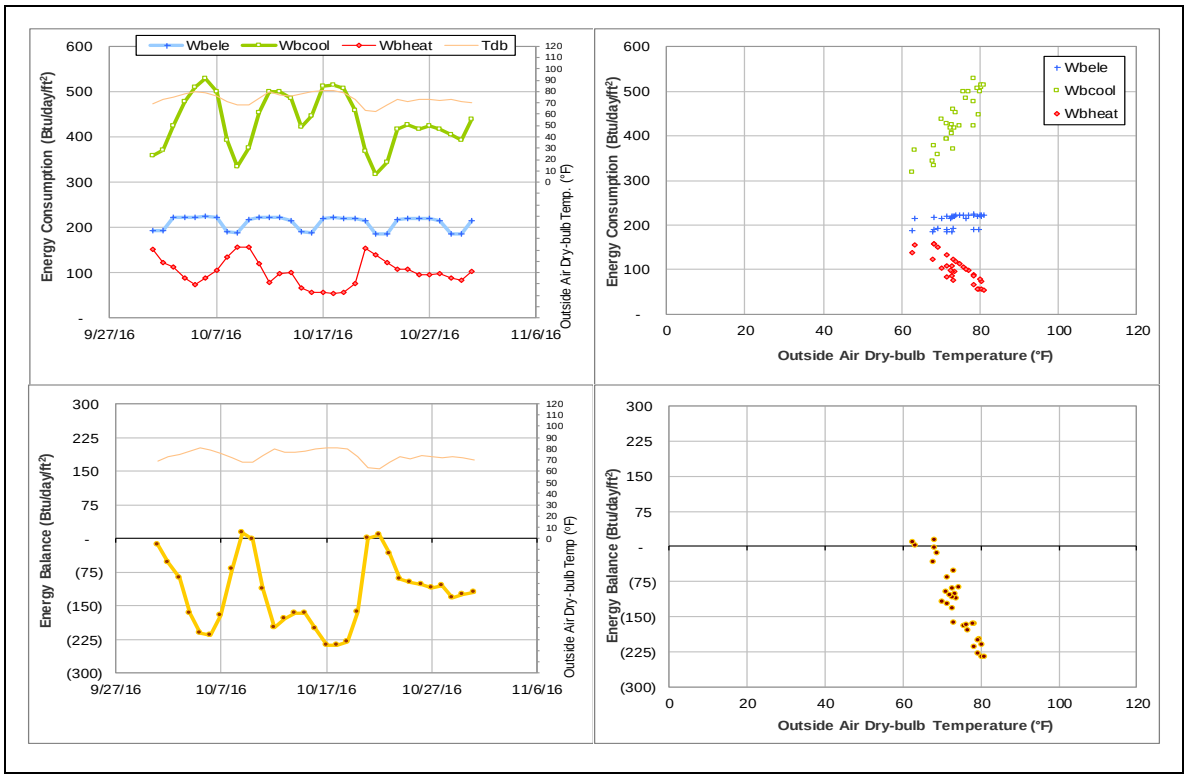
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during October 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis.



DPC Annex (TAMU BLDG # 517)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	006567	31	10/1/2016 – 10/31/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The consumption level is higher than the level during the past year.	8/14/2016 – 8/30/2016
	The consumption level is lower than the level during the past year.	8/31/2016 – 10/31/2016

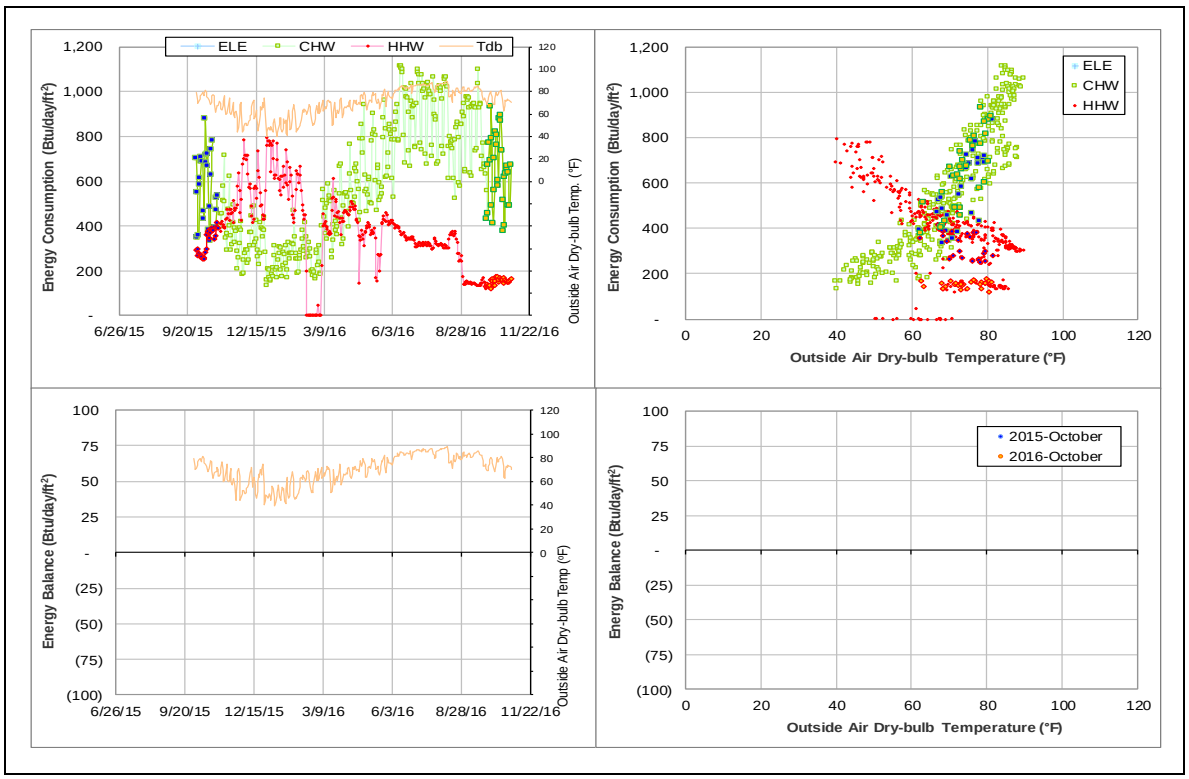
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	006567	8/14/2016 – 8/30/2016	Flow Rate	Increased
		8/31/2016 – 10/31/2016	Flow Rate	Decreased
			Return Temp	Increased

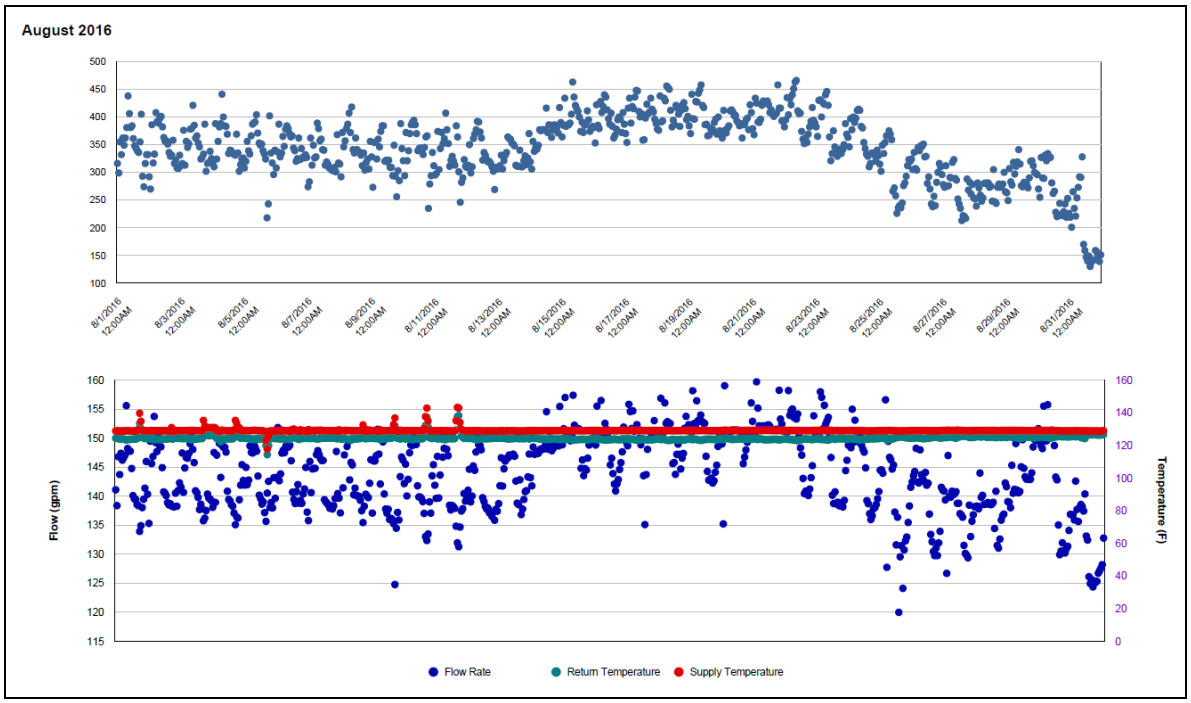
Quantitative descriptions and comments

HHW consumption of this building has been fluctuating since 8/14/2016. The consumption first increased from 300 Btu/day-sf level by 40 Btu/day-sf and then started to drop in steps and leveled at 140 Btu/day-sf starting 8/31/2016. Accordingly, HHW flow dropped from 145 gpm in the previous level to 130 gpm overall, and Delta-T also decreased.

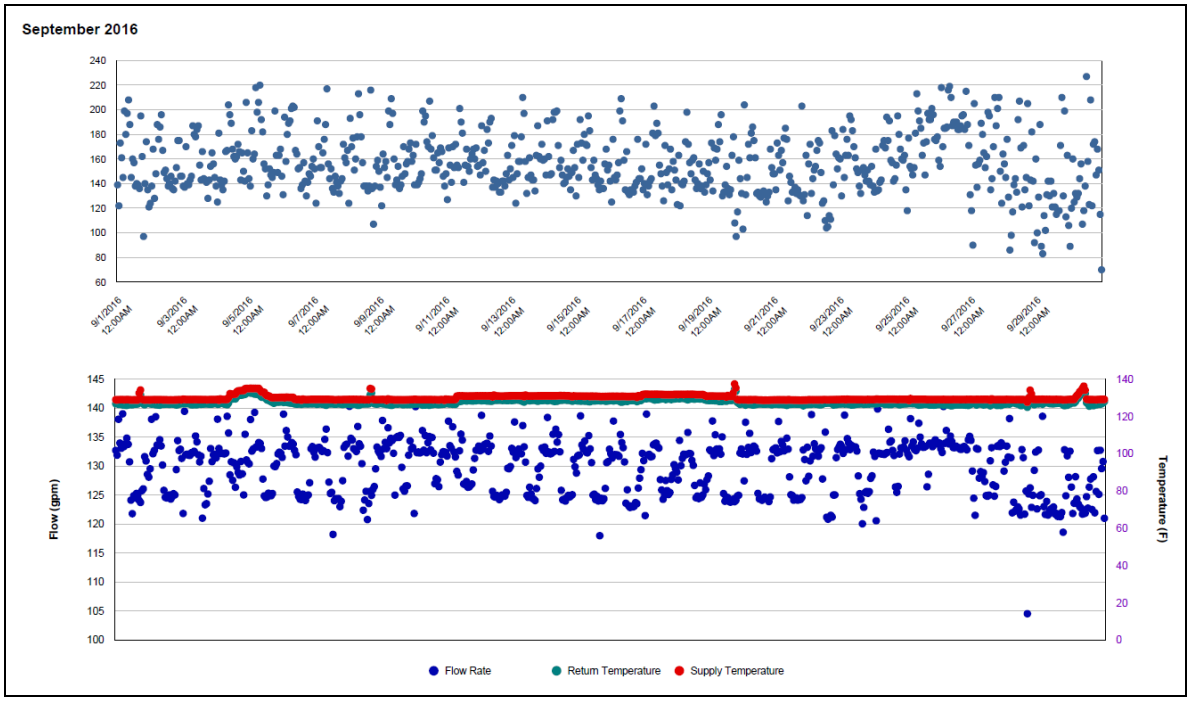
Explanatory Figure: 13 months energy balance plot with original data



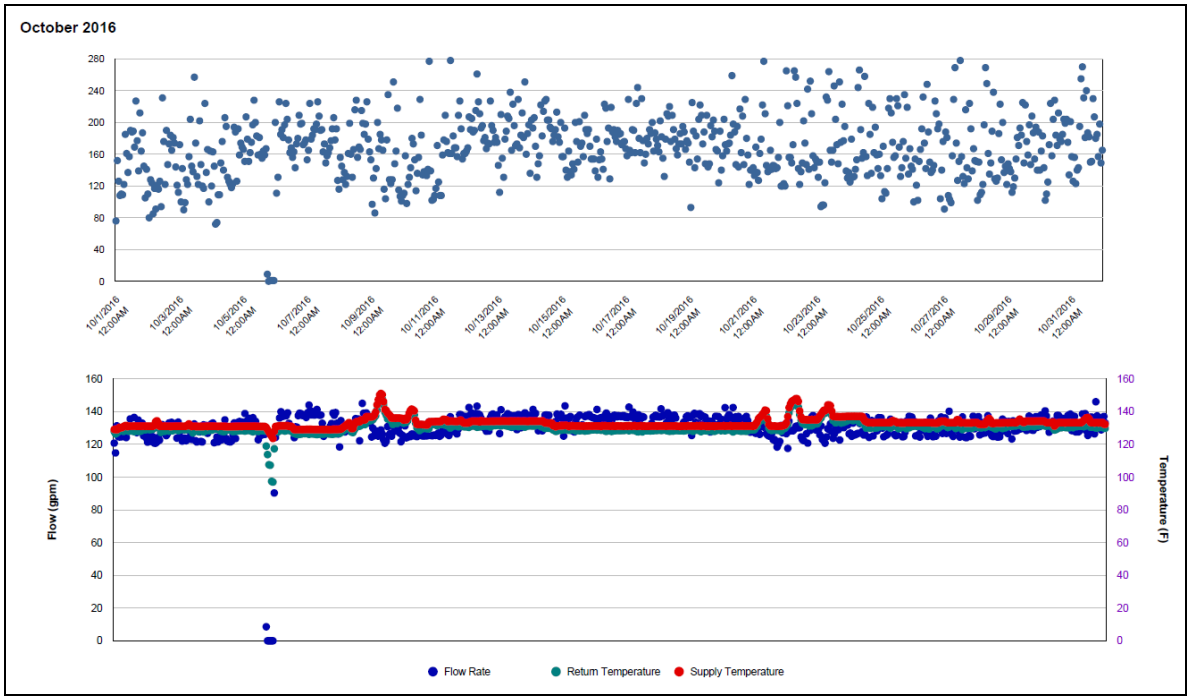
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during August 2016)



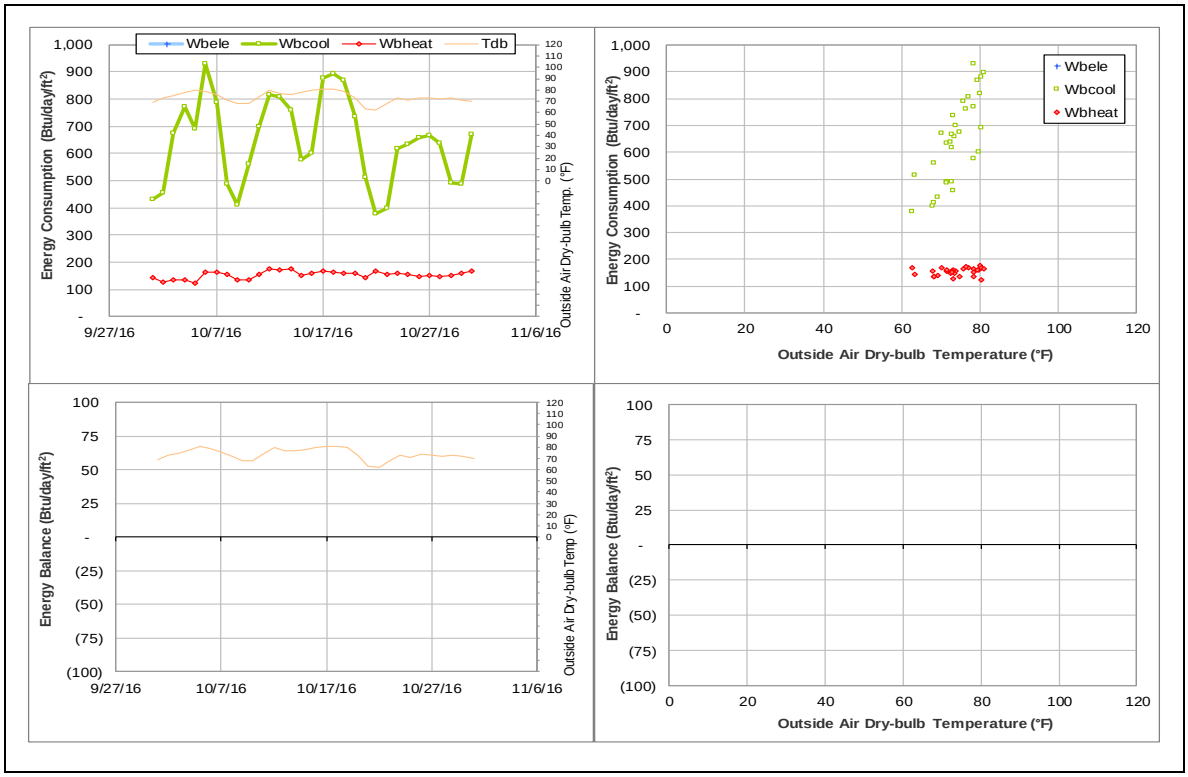
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during September 2016)



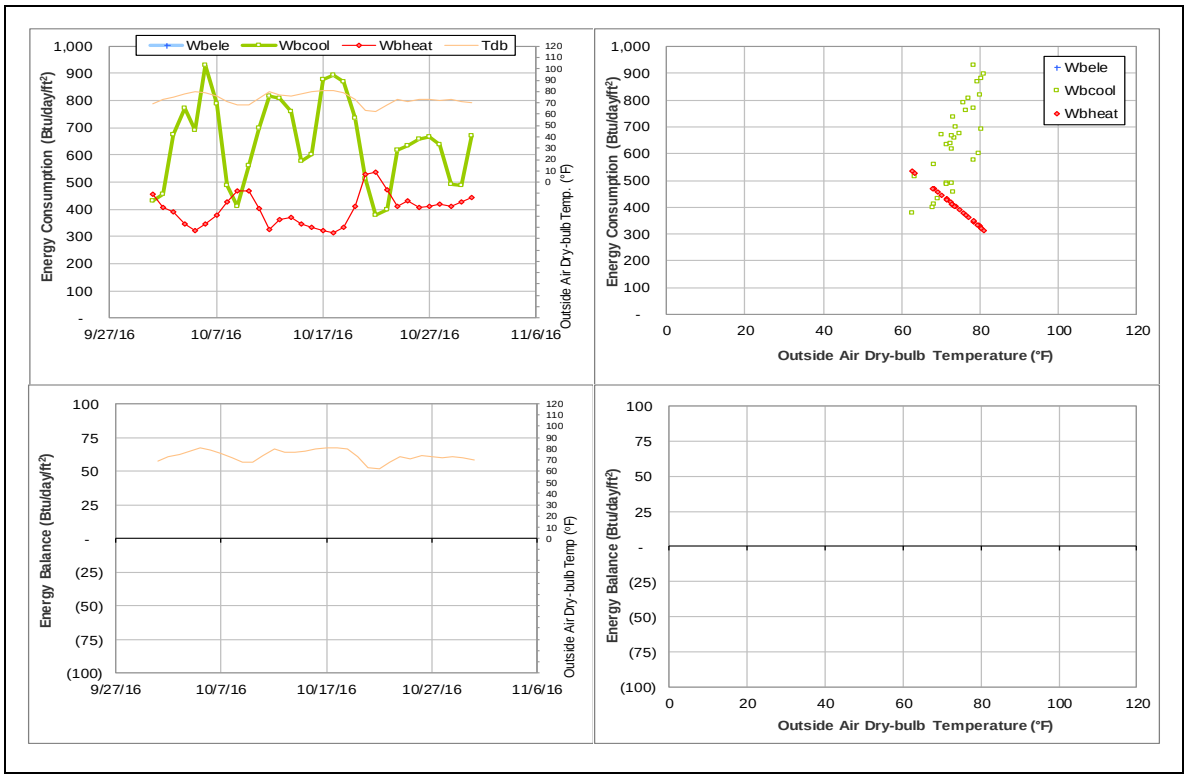
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during October 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis.



Biological Sciences Building – East (TAMU Bldg #467)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	003851	31	10/1/2016 – 10/31/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The metered values appear to be faulty.	8/6/2016 – Ongoing

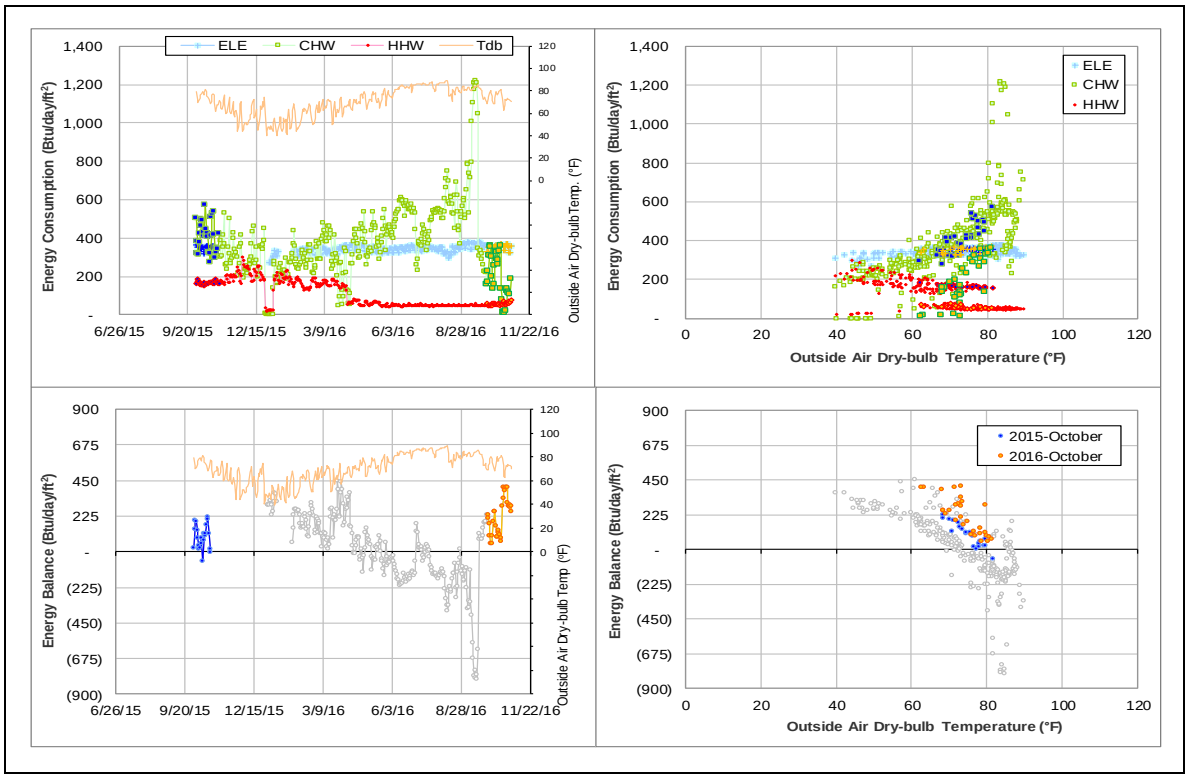
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
CHW	003851	8/6/2016 – 10/31/2016	Supply Temp	Faulty

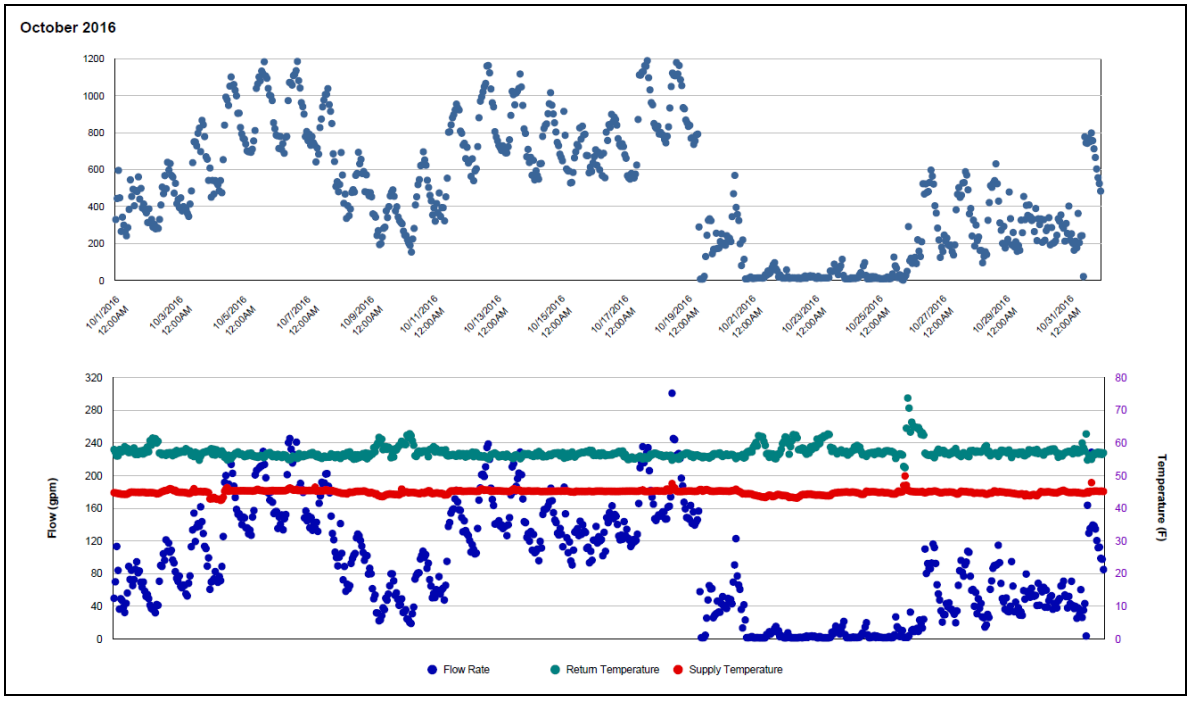
Quantitative descriptions and comments

The CHW supply temp readings started to decrease on 8/6/2016 while all adjacent buildings have stable supply temp at circa 42°F. The supply temp had a period of obviously erroneous values of 20°F during 9/10 – 9/20/2016, and then increased to 45°F. The readings are still questionable and the whole month is estimated using a model. See also section II-3.

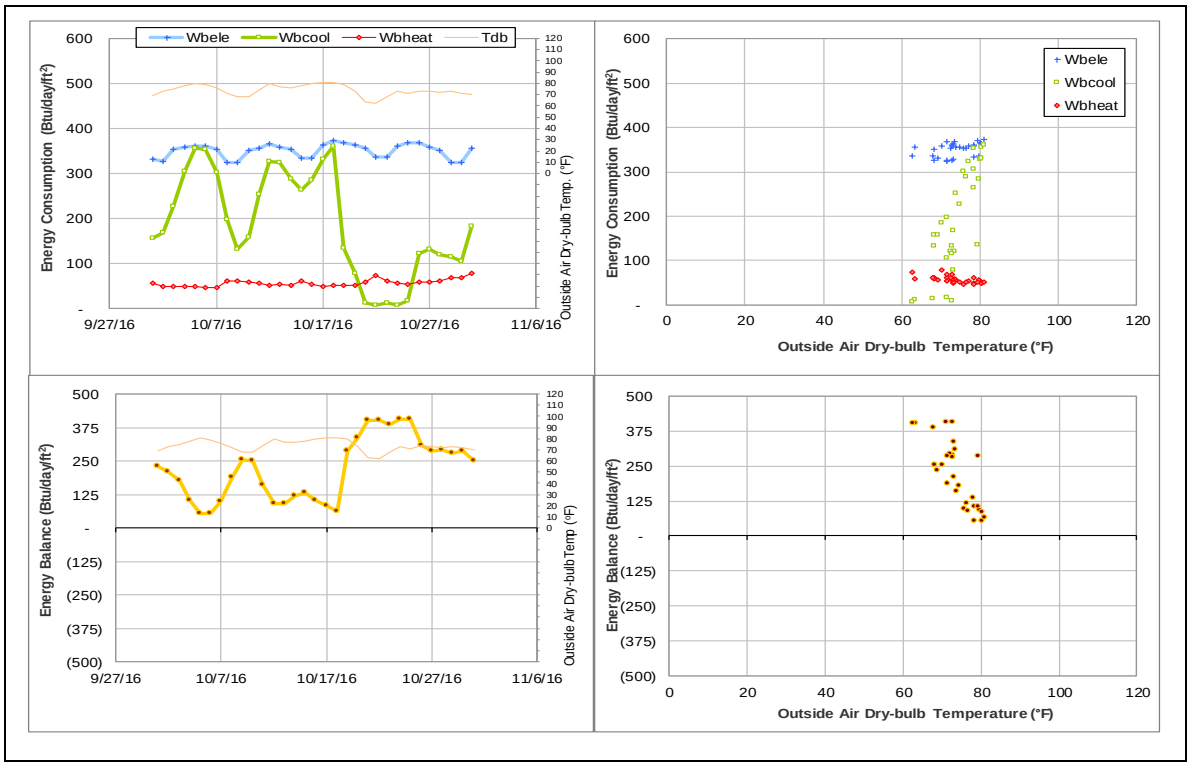
Explanatory Figure: 13 months energy balance plot with original data.



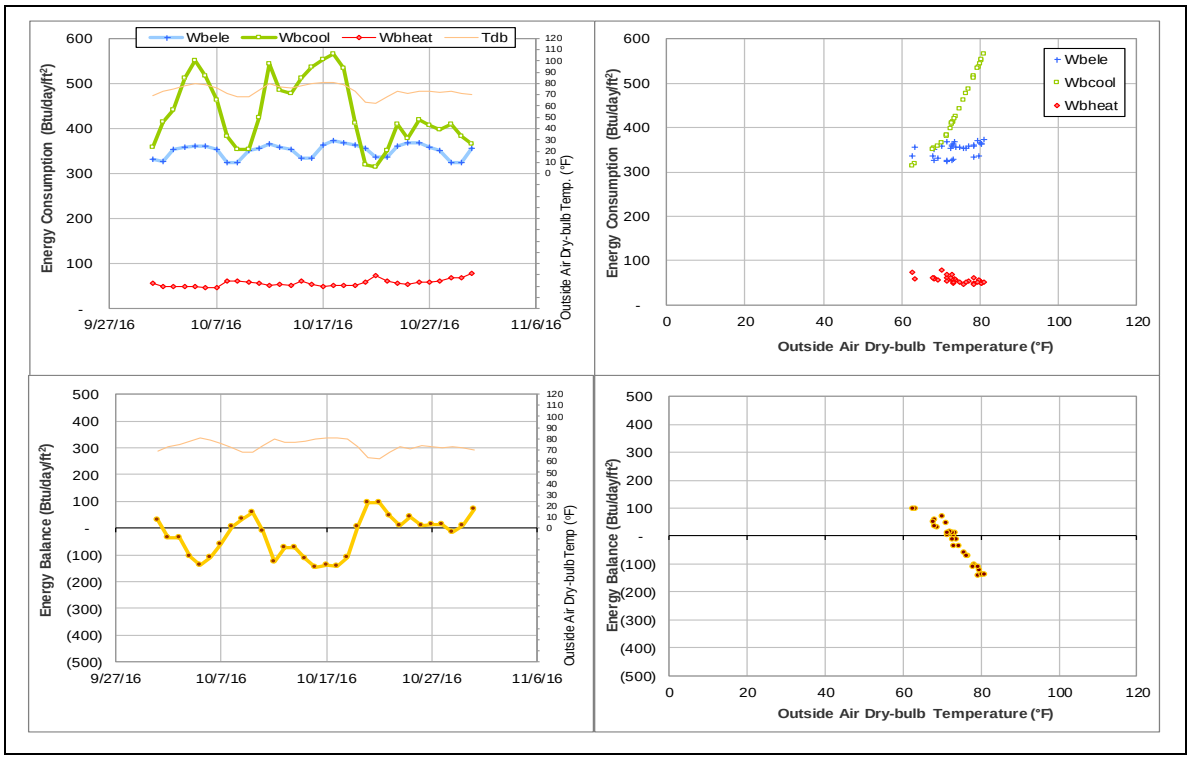
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (CHW during October 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis



Thompson Hall (TAMU Bldg #483)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	003887	29	10/1/2016 – 10/27/2016, 10/30/2016 – 10/31/2016	Model
HHW	003891	2	10/30/2016 – 10/31/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The metered values appear to be faulty.	7/26/2016 – 10/27/2016, 10/30/2016 – 10/31/2016
HHW	The metered values appear to be faulty.	10/30/2016 – 10/31/2016

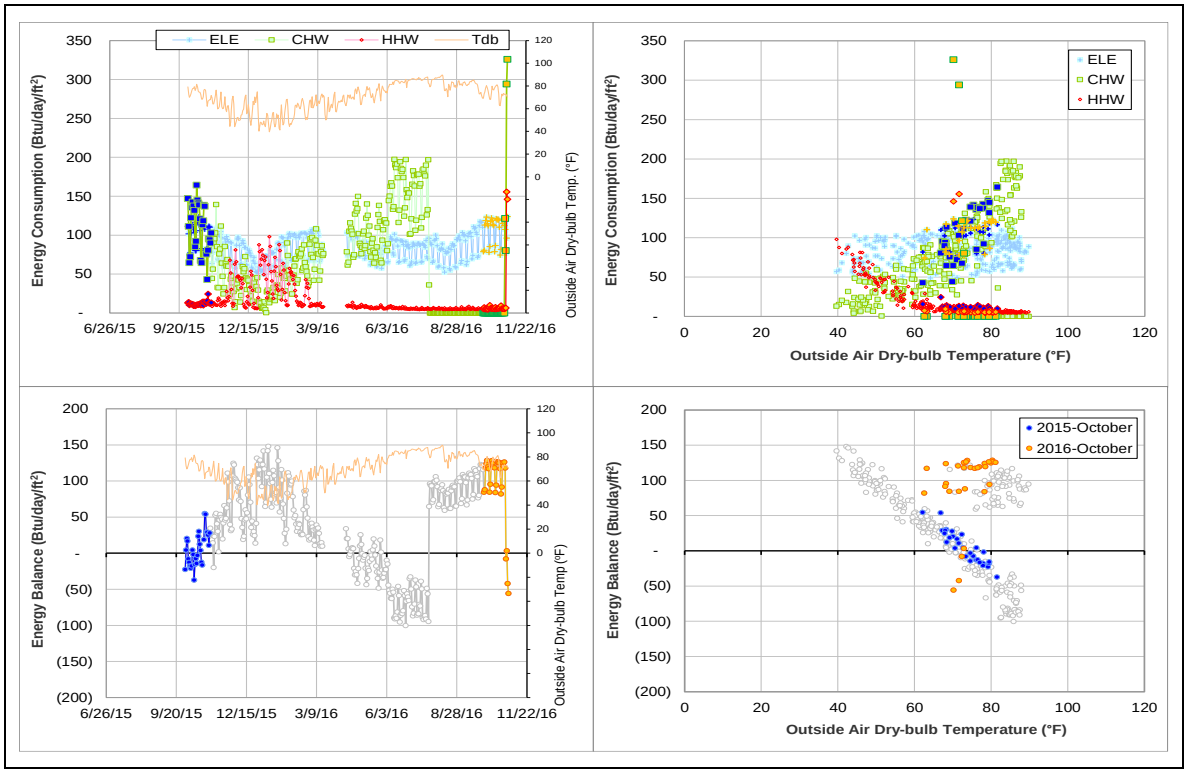
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
CHW	003887	7/26/2016 – 10/27/2016	Flow Rate	Faulty
		10/30/2016 – 10/31/2016	Flow Rate	Increased
			Return Temperature	Decreased
HHW	003891	10/30/2016 – 10/31/2016	Flow Rate	Increased
			Return Temperature	Decreased

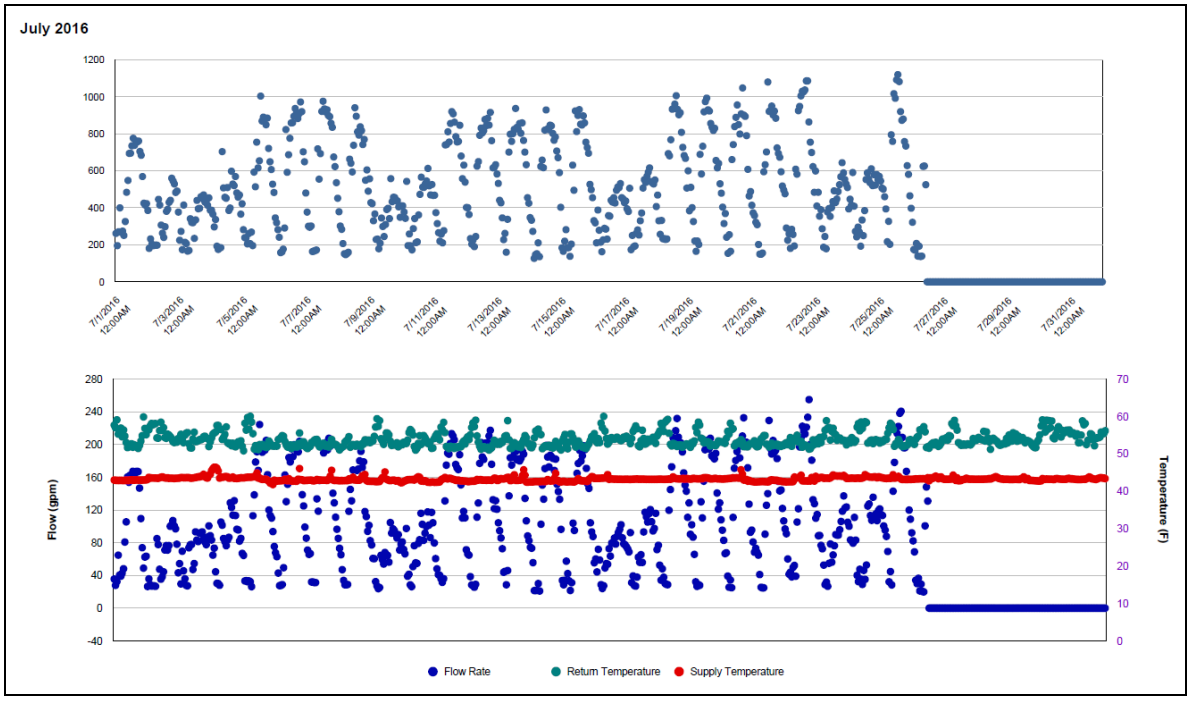
Quantitative descriptions and comments

The CHW flow rate readings were approximately -0.0008 gpm from 7/26/2016 through 10/27/2016. There was increased flow rate and reduced return water temperature for CHW and HHW for 10/30/2016 – 10/31/2016. But the consumption for these two days is extremely high and the data is questionable. The consumption is estimated by a model.

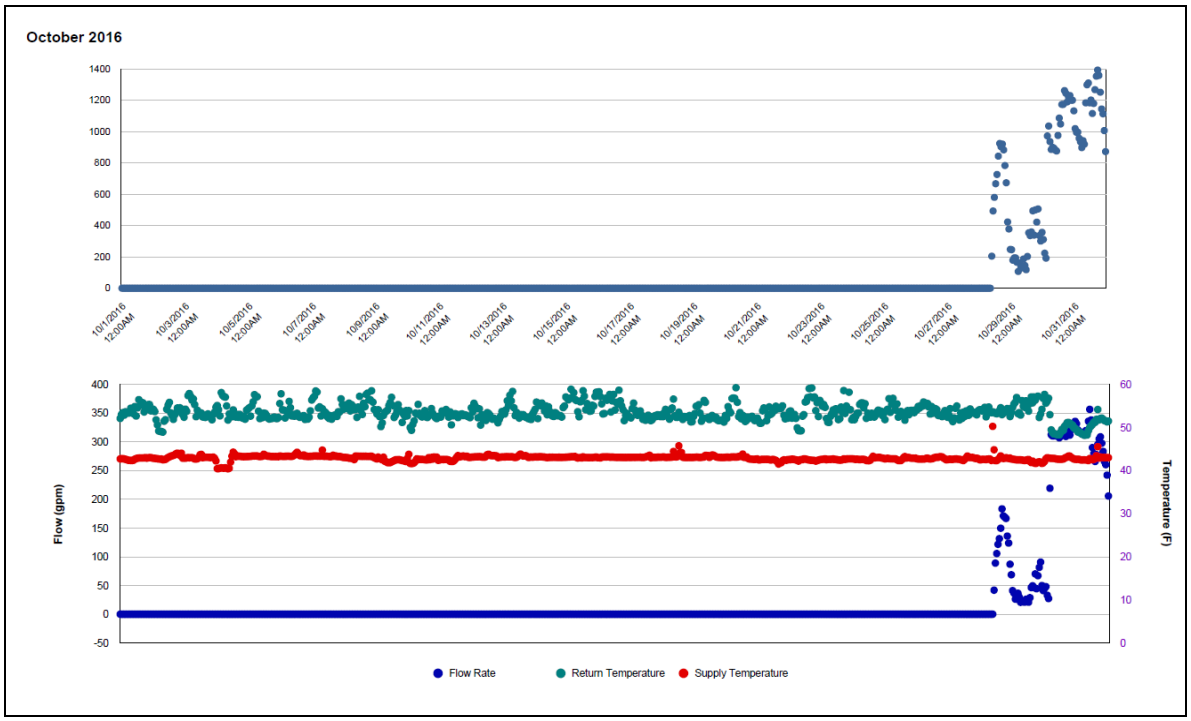
Explanatory Figure: 13 months energy balance plot with original data.



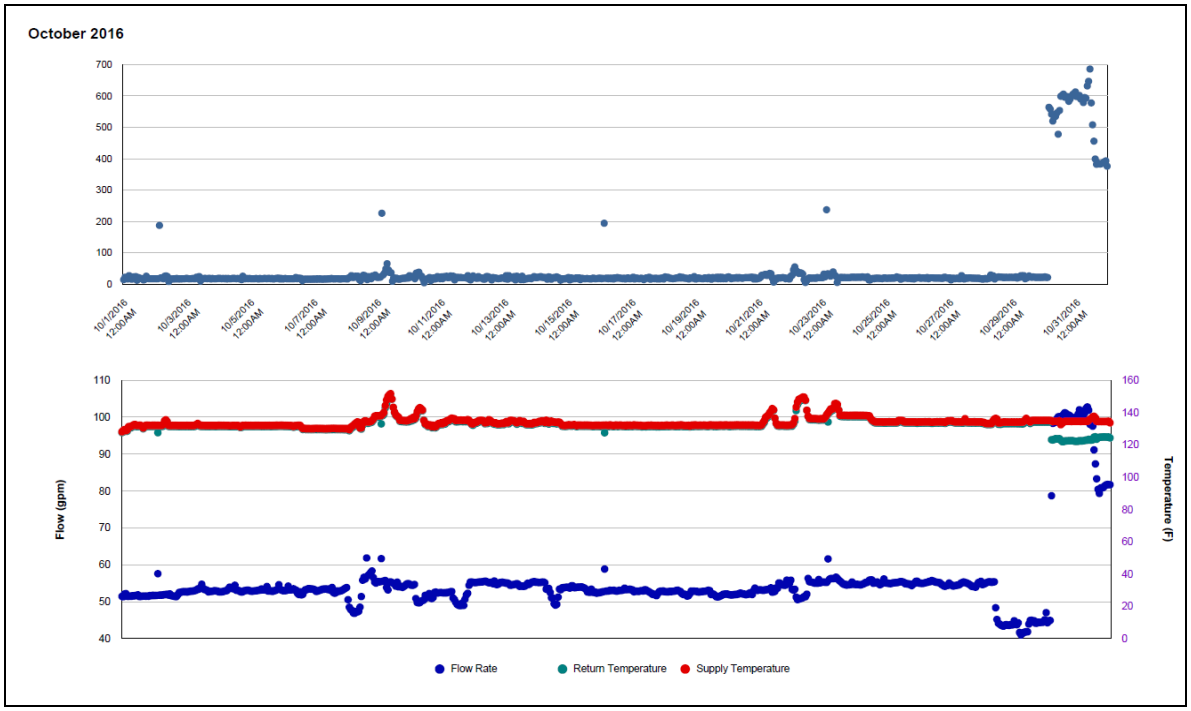
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (CHW during July 2016)



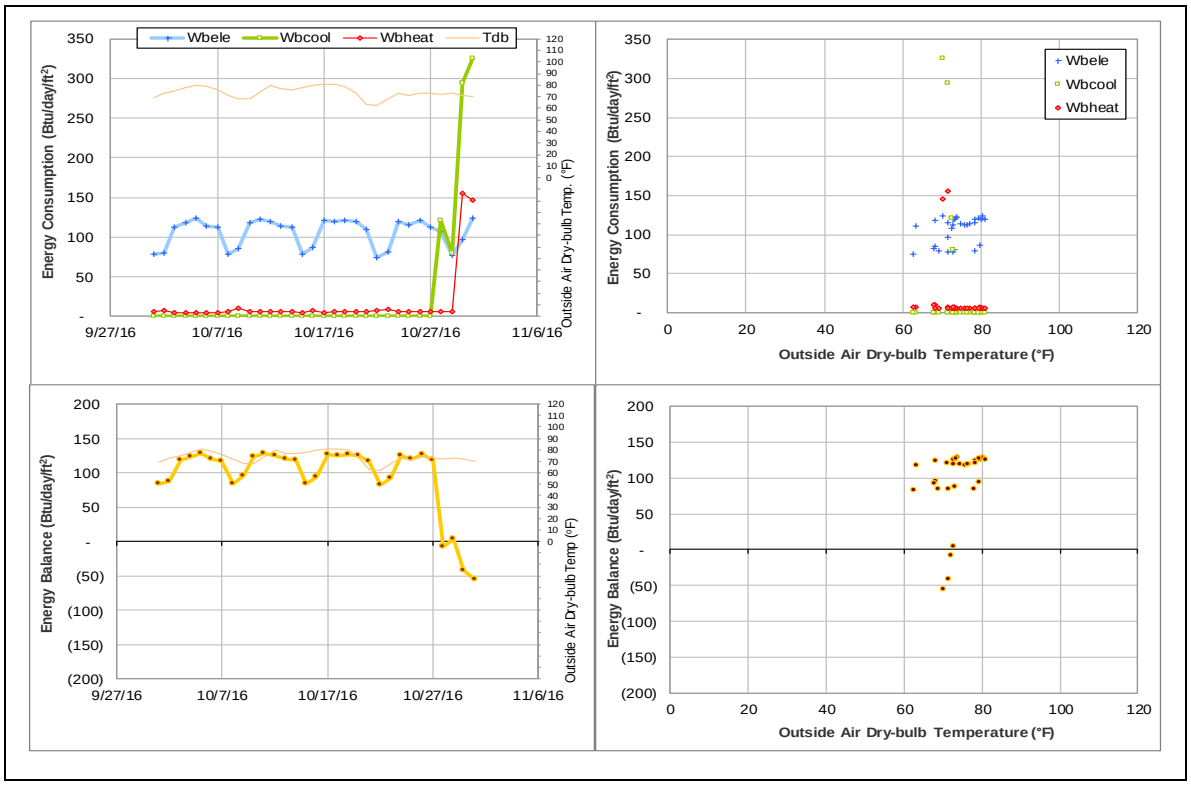
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (CHW during October 2016)



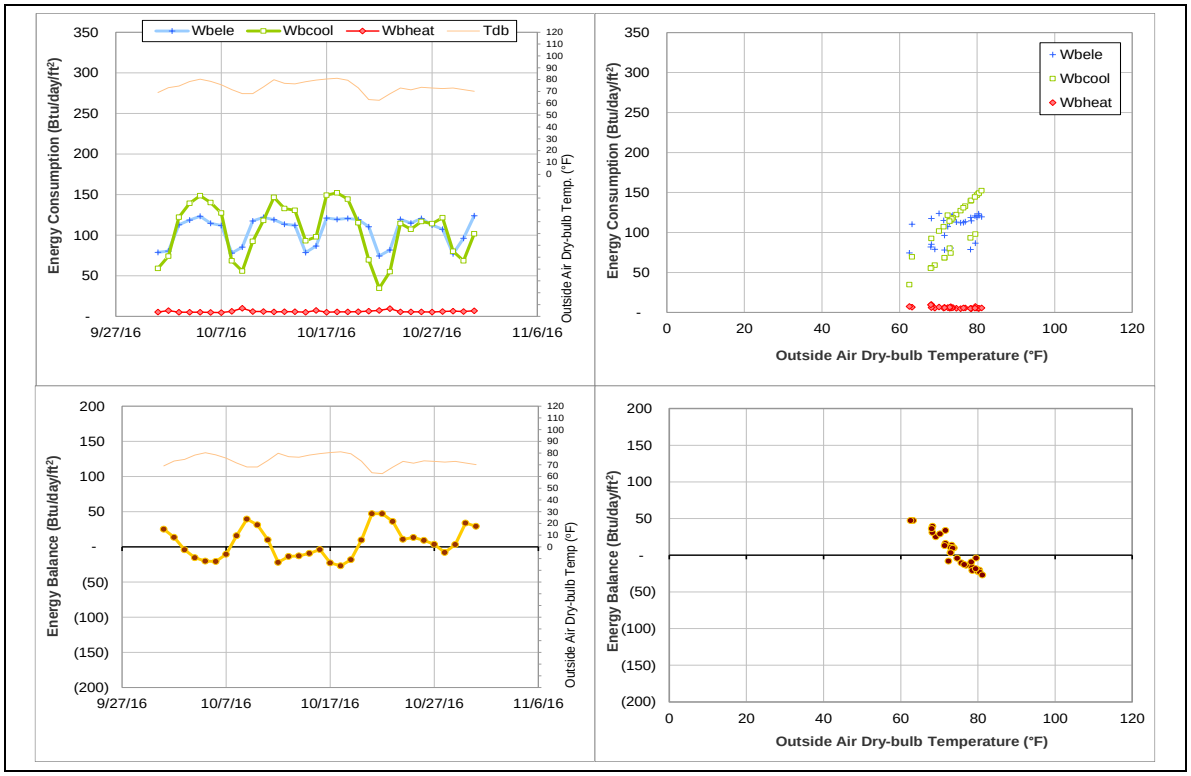
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during October 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis



Chemistry Building (TAMU Bldg #484)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
ELE	007557	31	10/1/2016 – 10/31/2016	Model

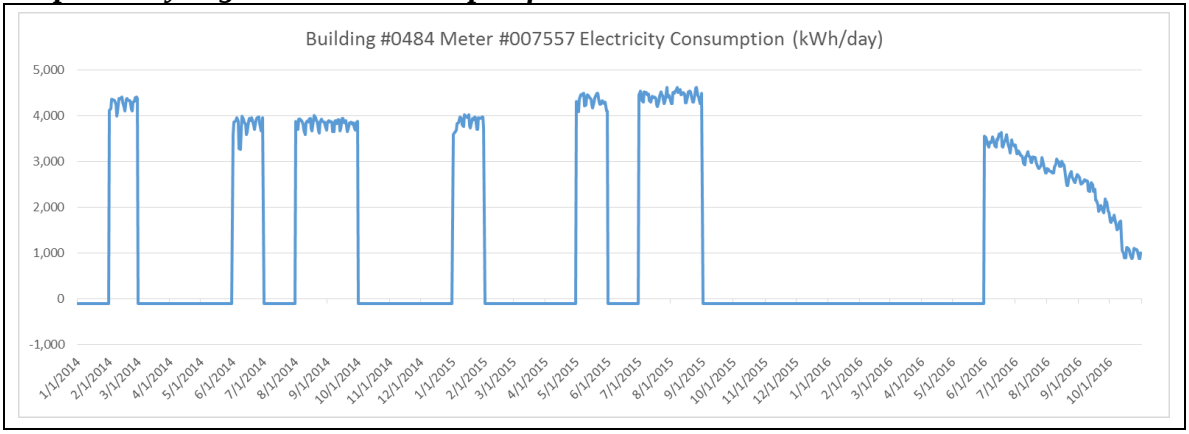
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
ELE	The ELE consumption level has decreased significantly.	10/1/2016 – 10/31/2016

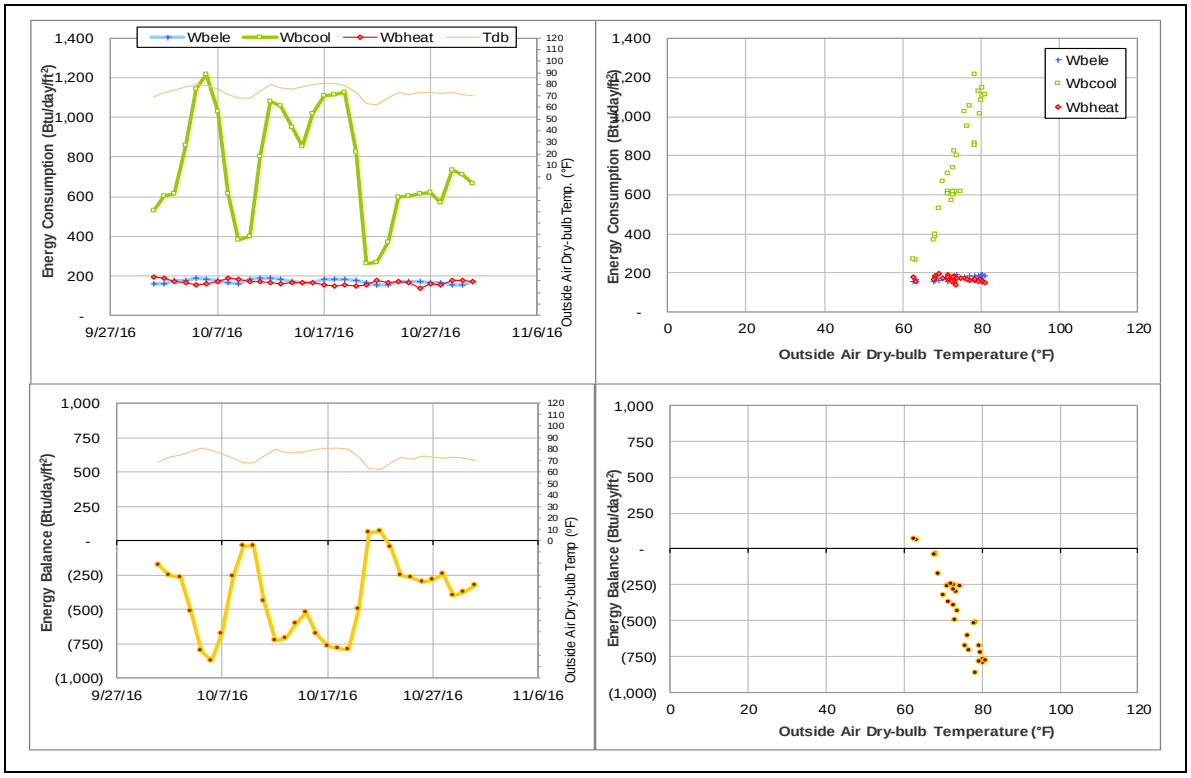
Quantitative descriptions and comments

There are four ELE meters for this building. The consumption for one of them (MID #007557) decreased gradually from 6/1/2016 to 8/31/2016 then more significantly in September and October 2016. The electricity for October 2016 was estimated by a model.

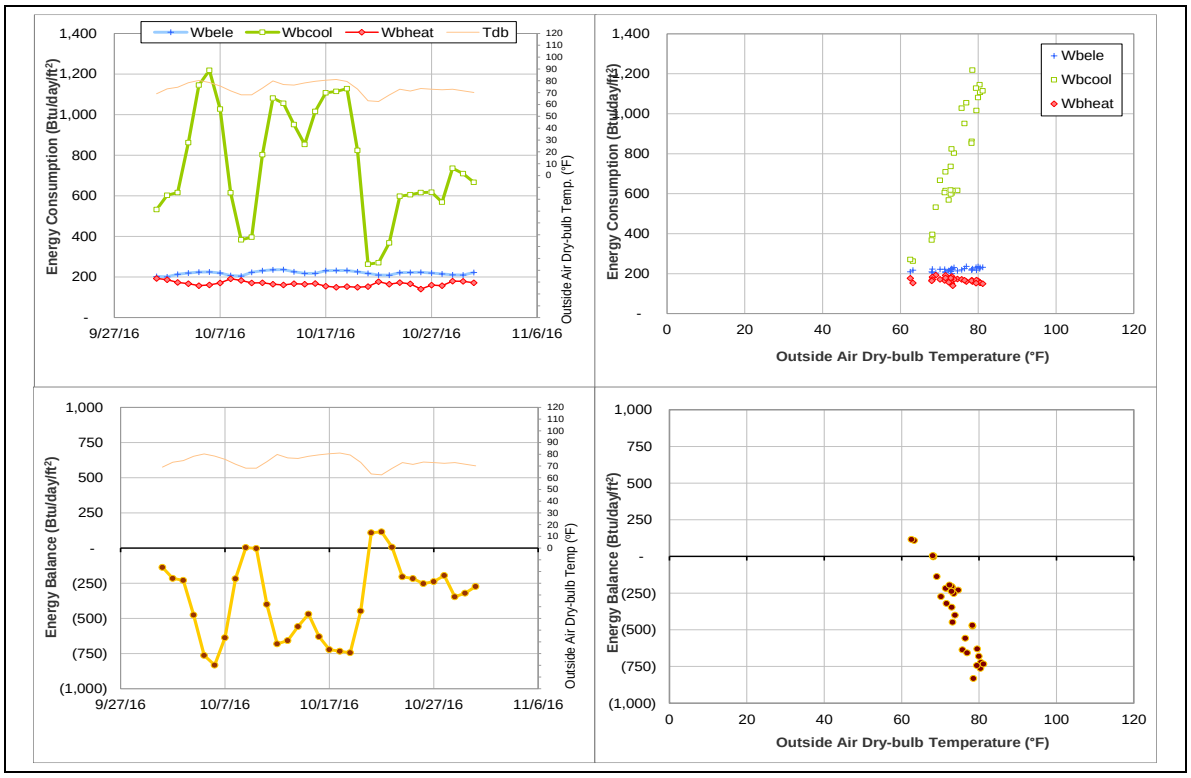
Explanatory Figure: Times series plot for meter #007557



Energy balance plot using the original data for the month of analysis.



Energy balance plot using the estimated data for the month of analysis



Civil Engineering Building (TAMU Bldg #492)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	005954	3	10/29/2016 – 10/31/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The HHW consumption decreased to zero.	10/29/2016 – 10/31/2016

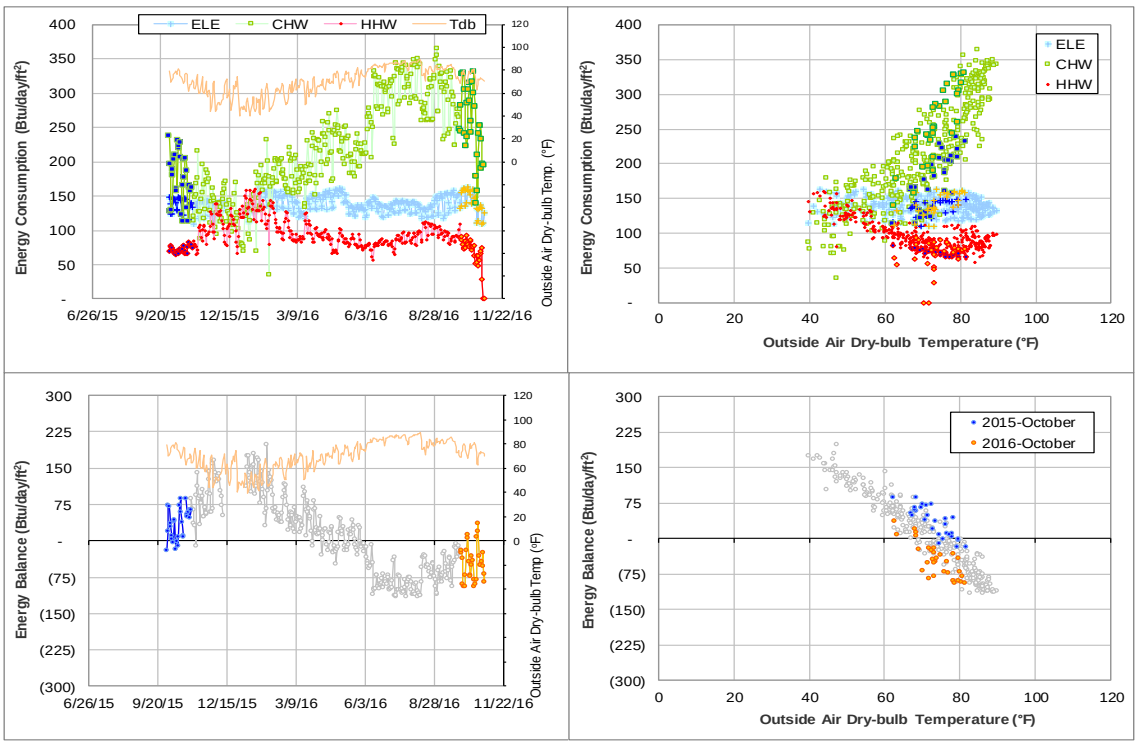
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	005954	10/29/2016 – 10/31/2016	Flow rate	Sudden decrease to zero
			Delta-T	Sudden decrease, nearly zero

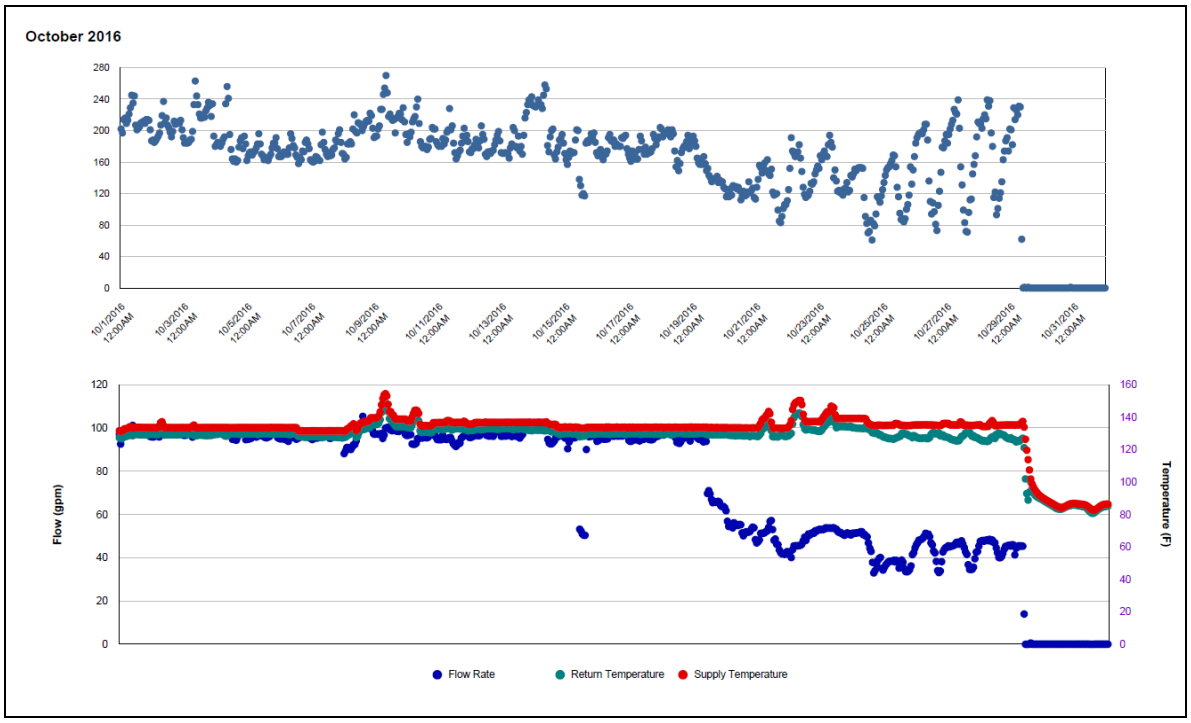
Quantitative descriptions and comments

Starting 10/29/2016, the HHW flow rate decreased to zero and both supply and return temperatures dropped to around 85°F. The HHW was estimated by model for this period.

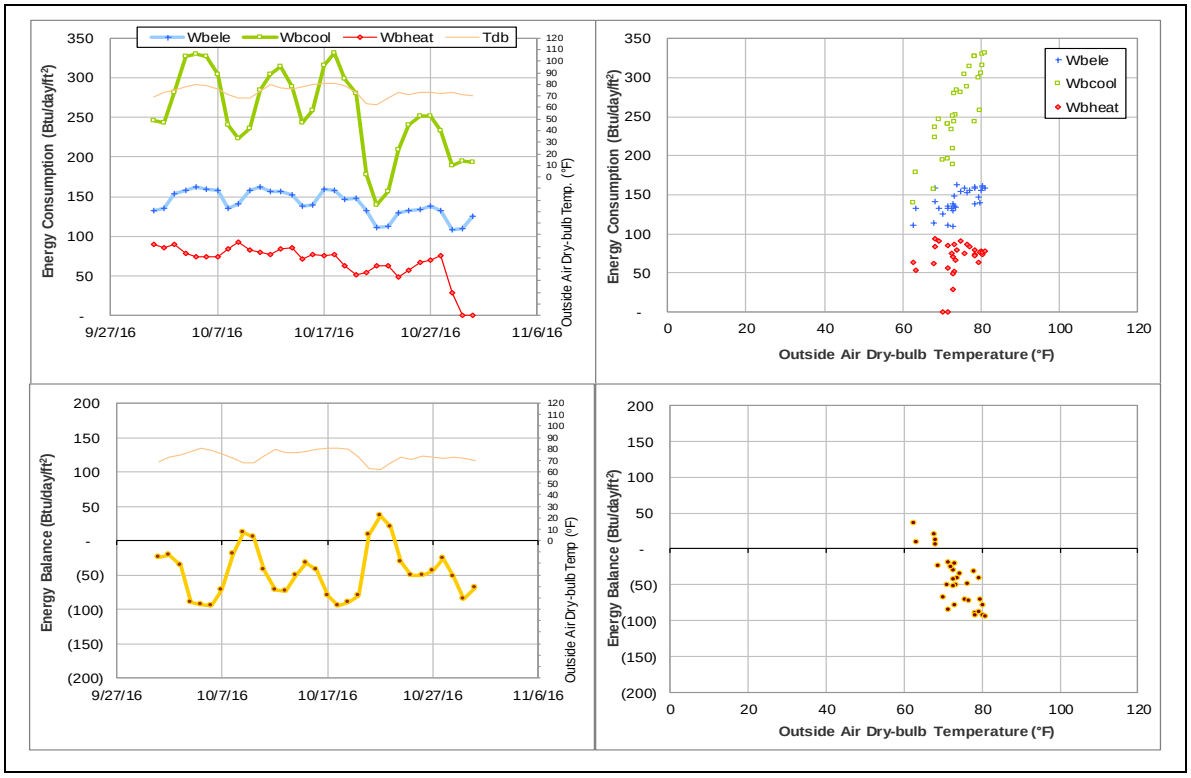
Explanatory Figure: 13 months energy balance plot with original data.



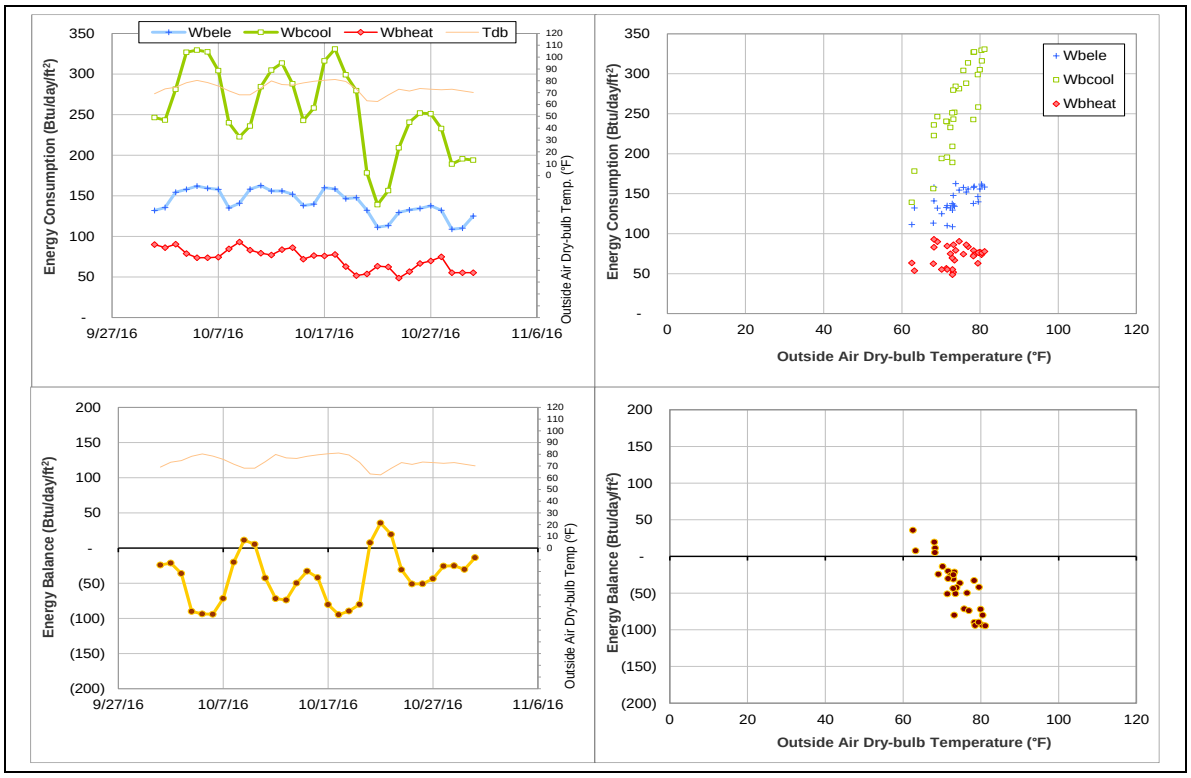
Explanatory Figure: Time series plots of hourly HHW energy consumption, flow, and supply/return temperatures from utilities office. (HHW during October 2016)



Energy balance plot using the original data for the month of analysis.



Energy balance plot using the estimated data for the month of analysis



Heep Laboratory Building (TAMU Bldg #511)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	005821	31	10/1/2016 – 10/31/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The consumption level increased.	6/14/2016 – Ongoing
Energy Balance	The energy balance pattern dropped.	6/14/2016 – Ongoing

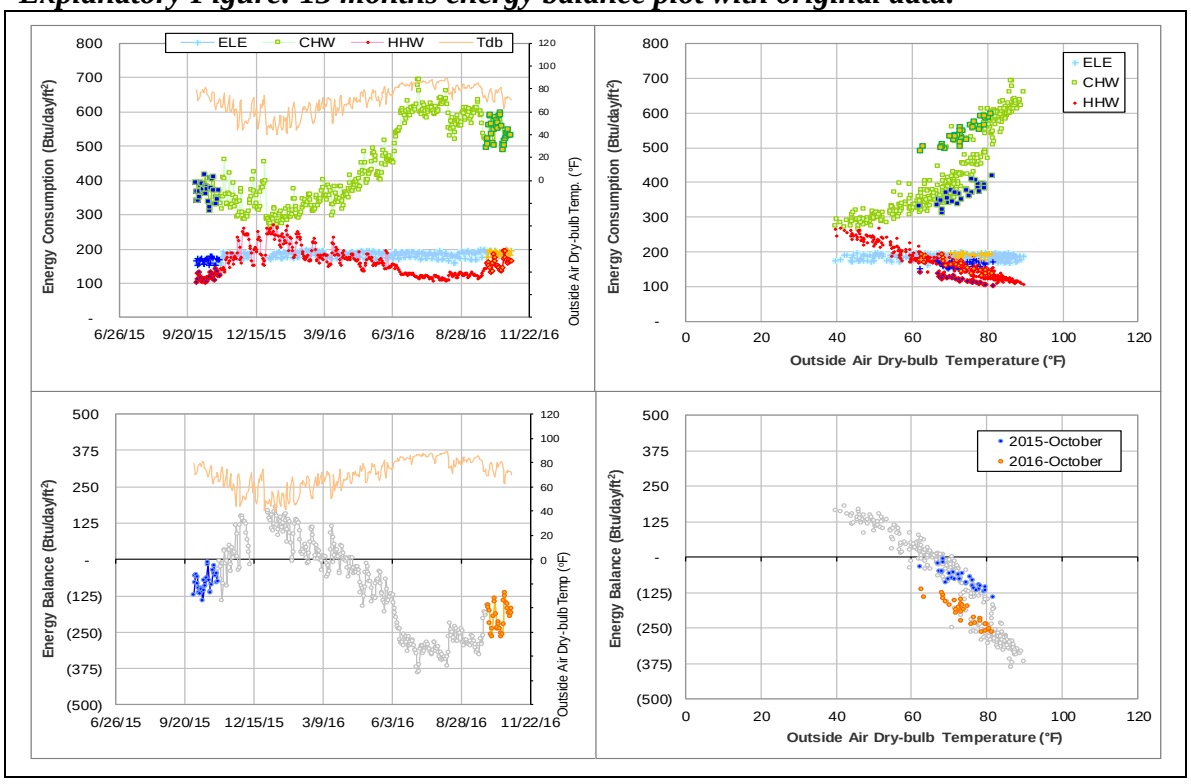
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
CHW	005821	6/14/2016 – Ongoing	Delta-T	Increased

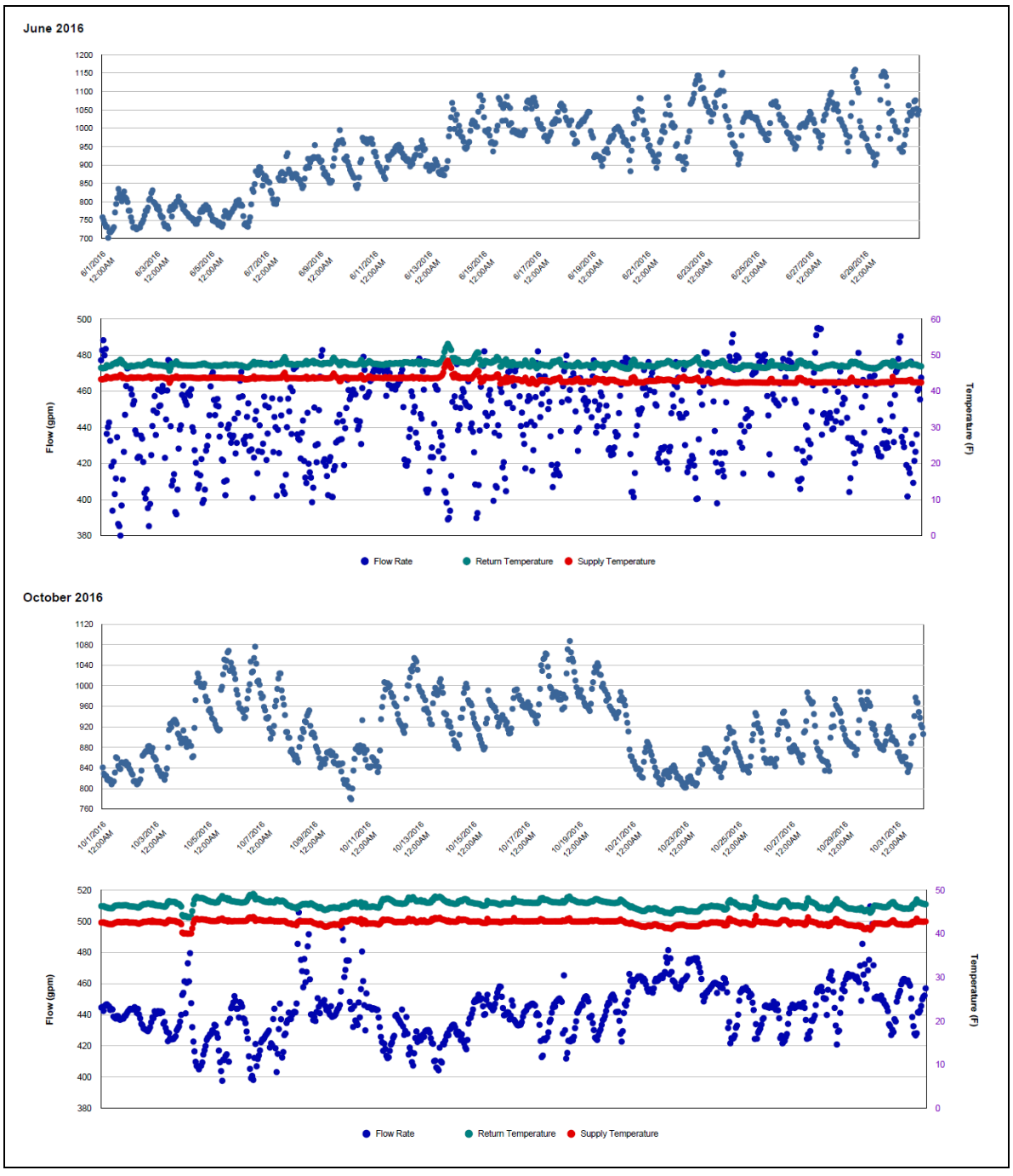
Quantitative descriptions and comments

The CHW consumption increased by 100 Btu/day/ft^2 starting around 6/14/2016 and the pattern continues through October. This increased energy consumption pattern can be clearly seen sitting above the 13-month pattern in the energy balance plot below. This appears to be due to an increase in delta T. Also, the pattern for the building's energy balance appears to have shifted downward, putting the change-point temperature below 60°F. CHW consumption was estimated by model for October.

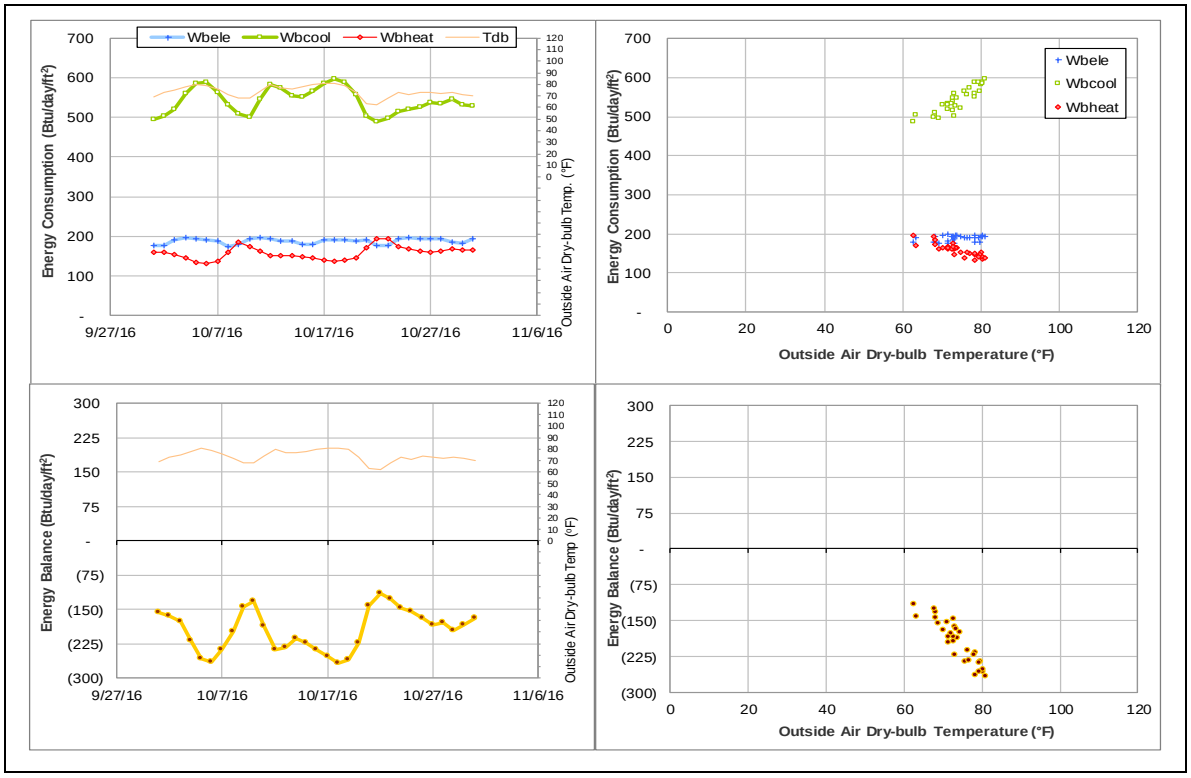
Explanatory Figure: 13 months energy balance plot with original data.



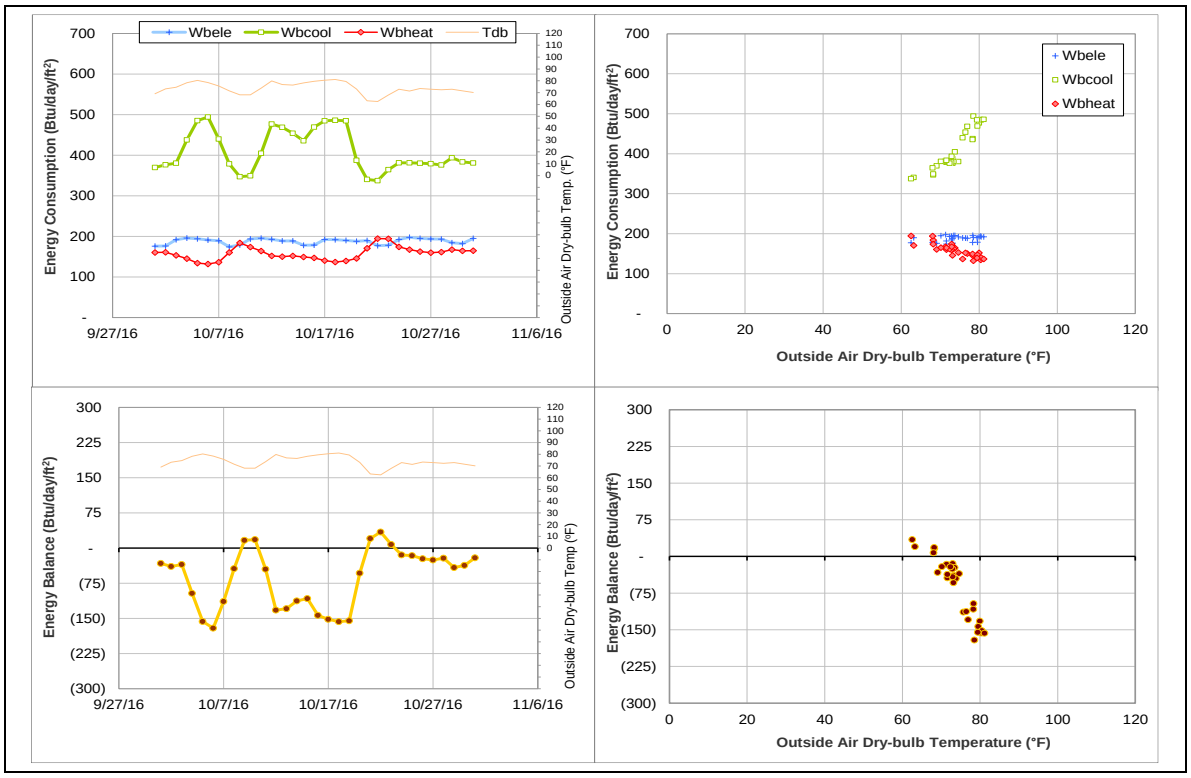
Explanatory Figure: Time series plots of hourly CHW energy consumption, flow, and supply/return temperatures from utilities office. (top: June 2016, bottom: October 2016) Note the gradual increase in delta T started in June 2016.



Energy balance plot using the original data for the month of analysis.



Energy balance plot using the estimated data for the month of analysis



All Faiths Chapel (TAMU Bldg #512)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	004293	31	10/1/2016 – 10/31/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The HHW consumption decreased to near zero.	7/6/2016 – Ongoing

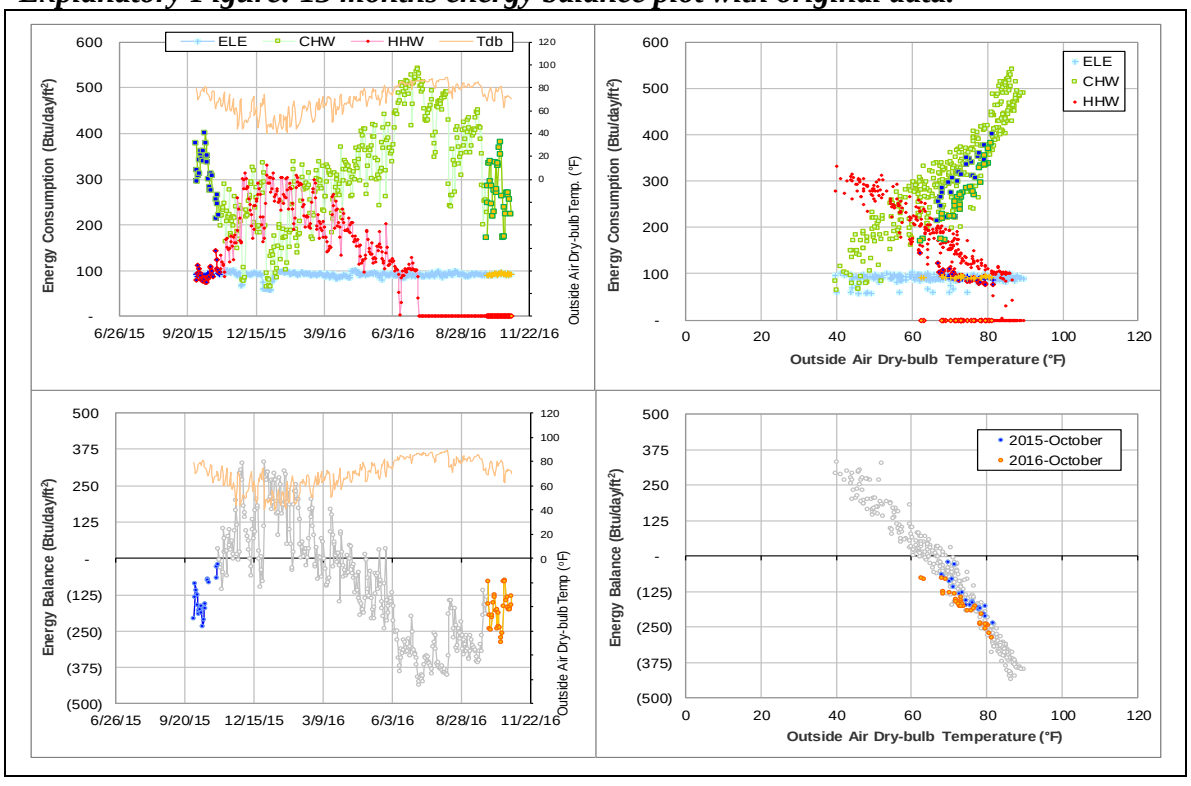
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	004293	7/6/2016 – Ongoing	Flow rate	Sudden decrease, nearly zero
			Delta-T	Sudden decrease, nearly zero

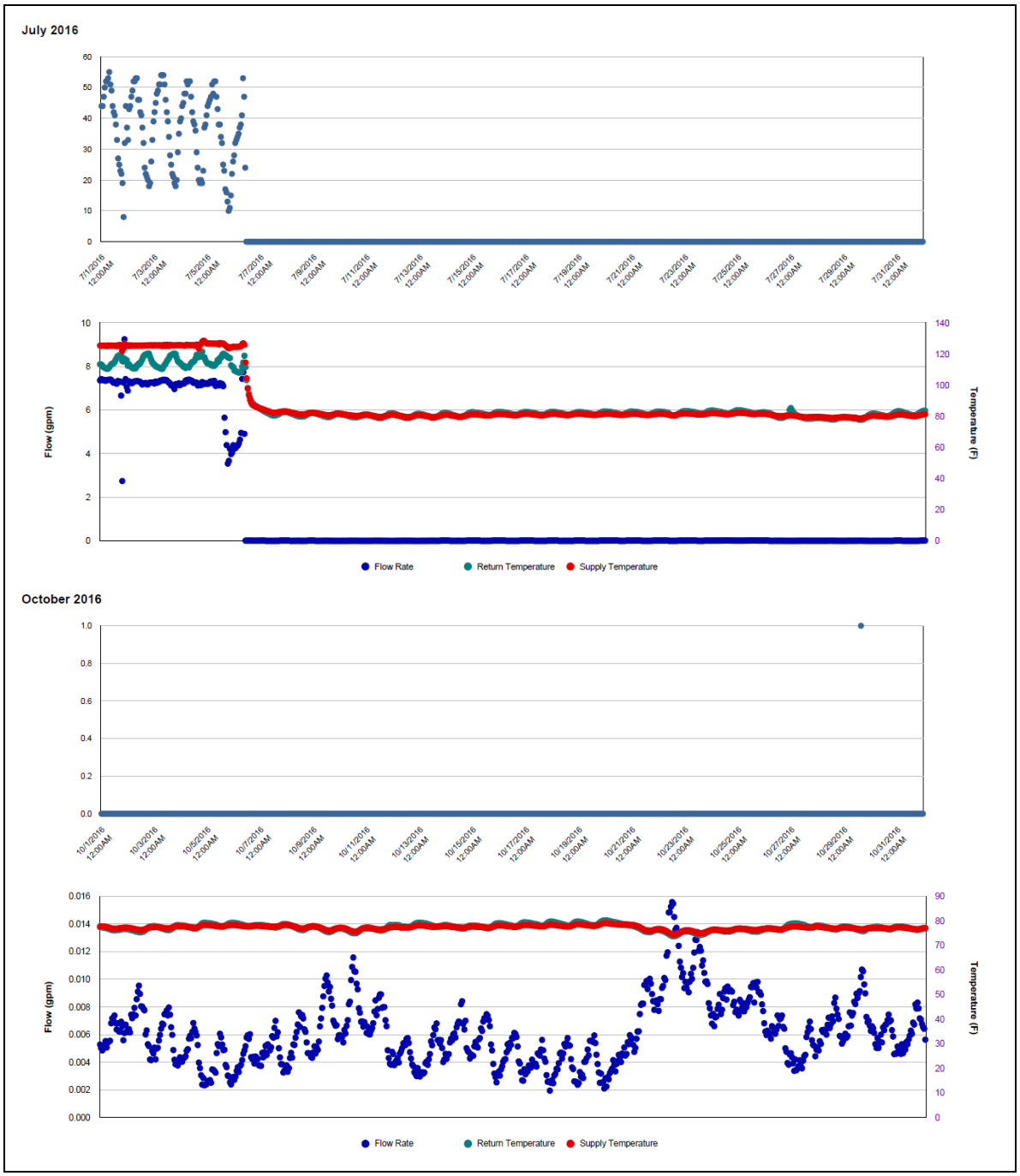
Quantitative descriptions and comments

Starting around 7/6/2016, the HHW flow rate decreased to near zero and both supply and return temperature dropped to around 80°F and has continued like this through October. The HHW was estimated by model for this period.

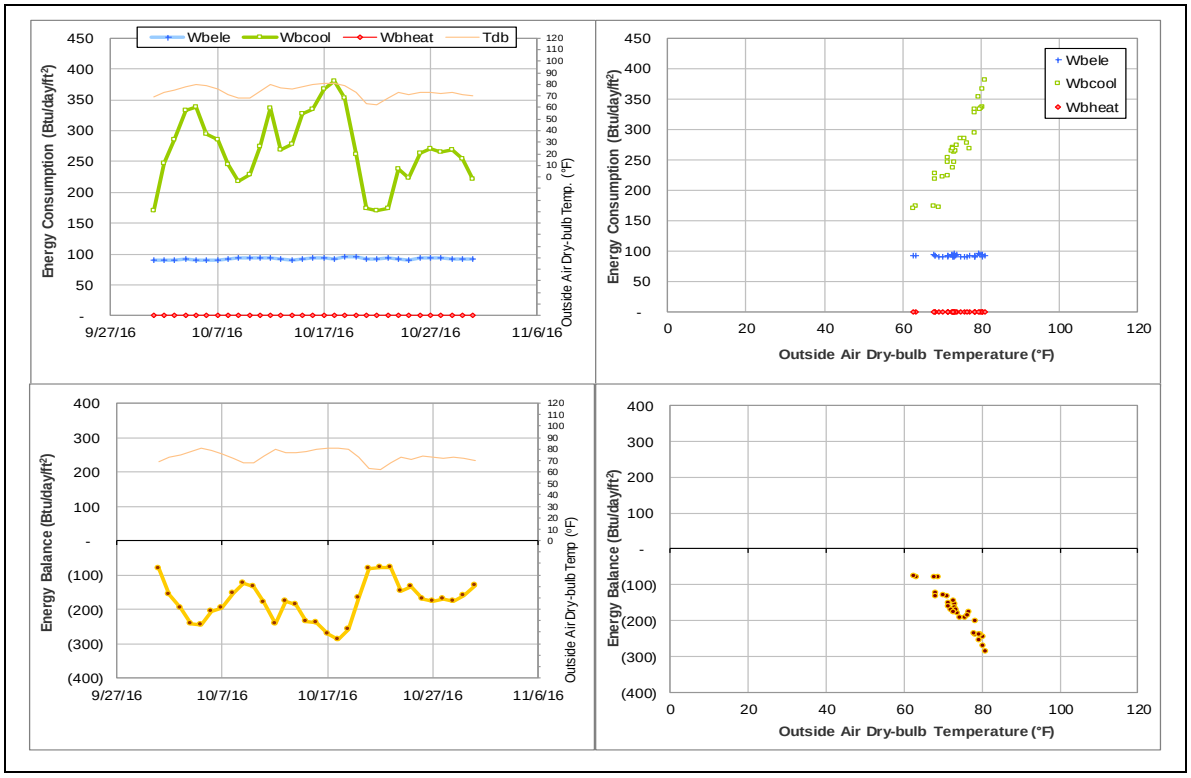
Explanatory Figure: 13 months energy balance plot with original data.



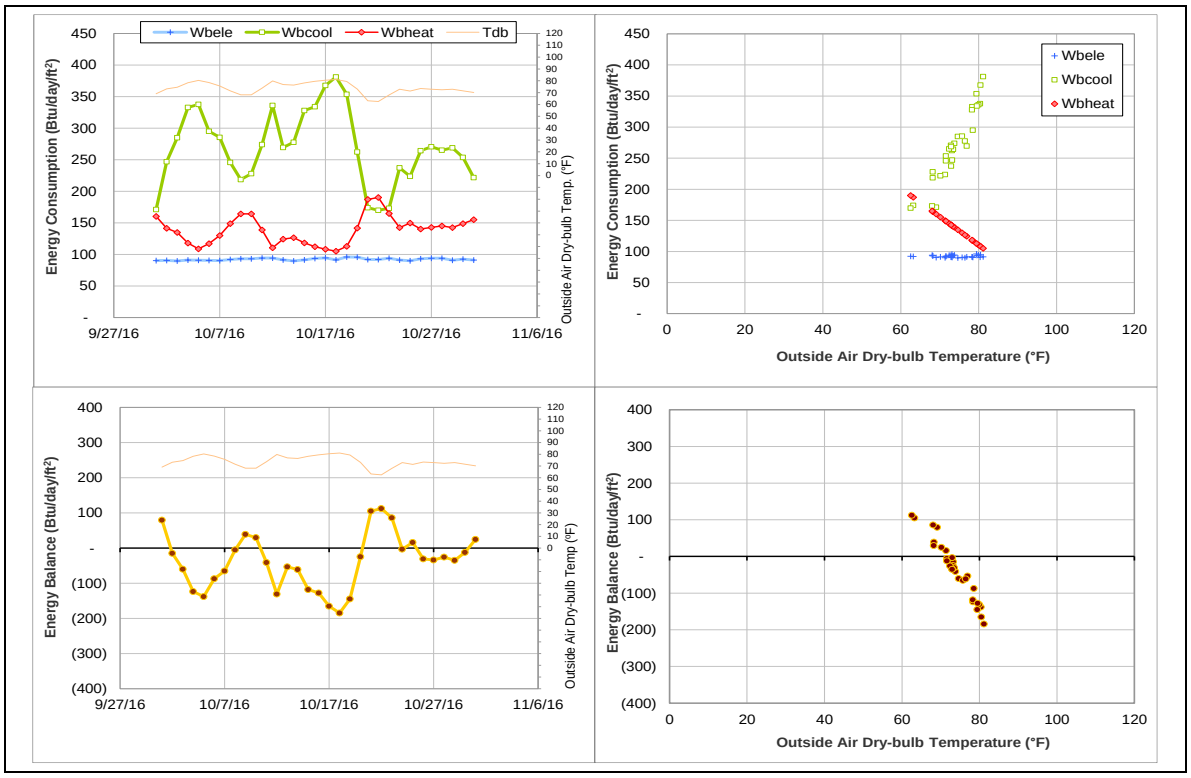
Explanatory Figure: Time series plots of hourly HHW energy consumption, flow, and supply/return temperatures from utilities office. (top: July 2016, bottom: October 2016)



Energy balance plot using the original data for the month of analysis.



Energy balance plot using the estimated data for the month of analysis



McNew Laboratory (TAMU Bldg #740)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	005968	31	10/1/2016 – 10/31/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	Decrease in HHW consumption.	5/31/2016– Ongoing

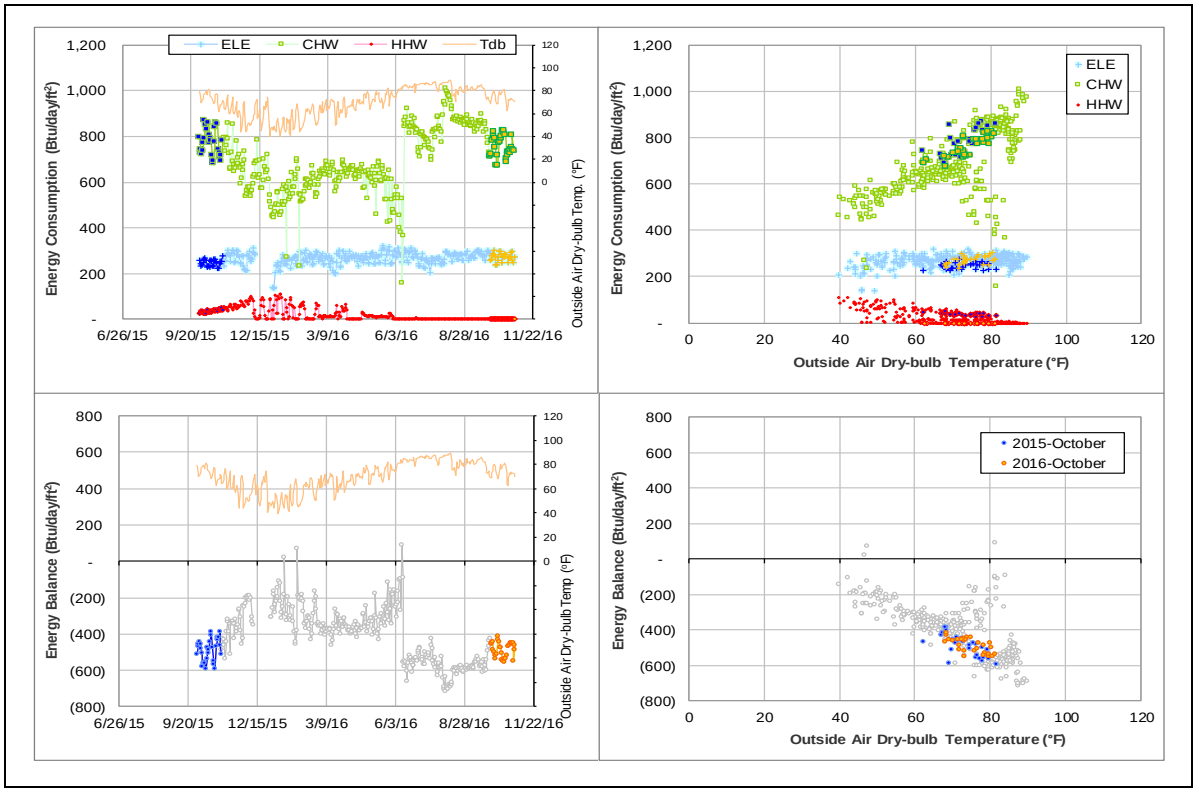
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	005968	5/31/2016 – Ongoing	Flow rate	Decrease to near zero values

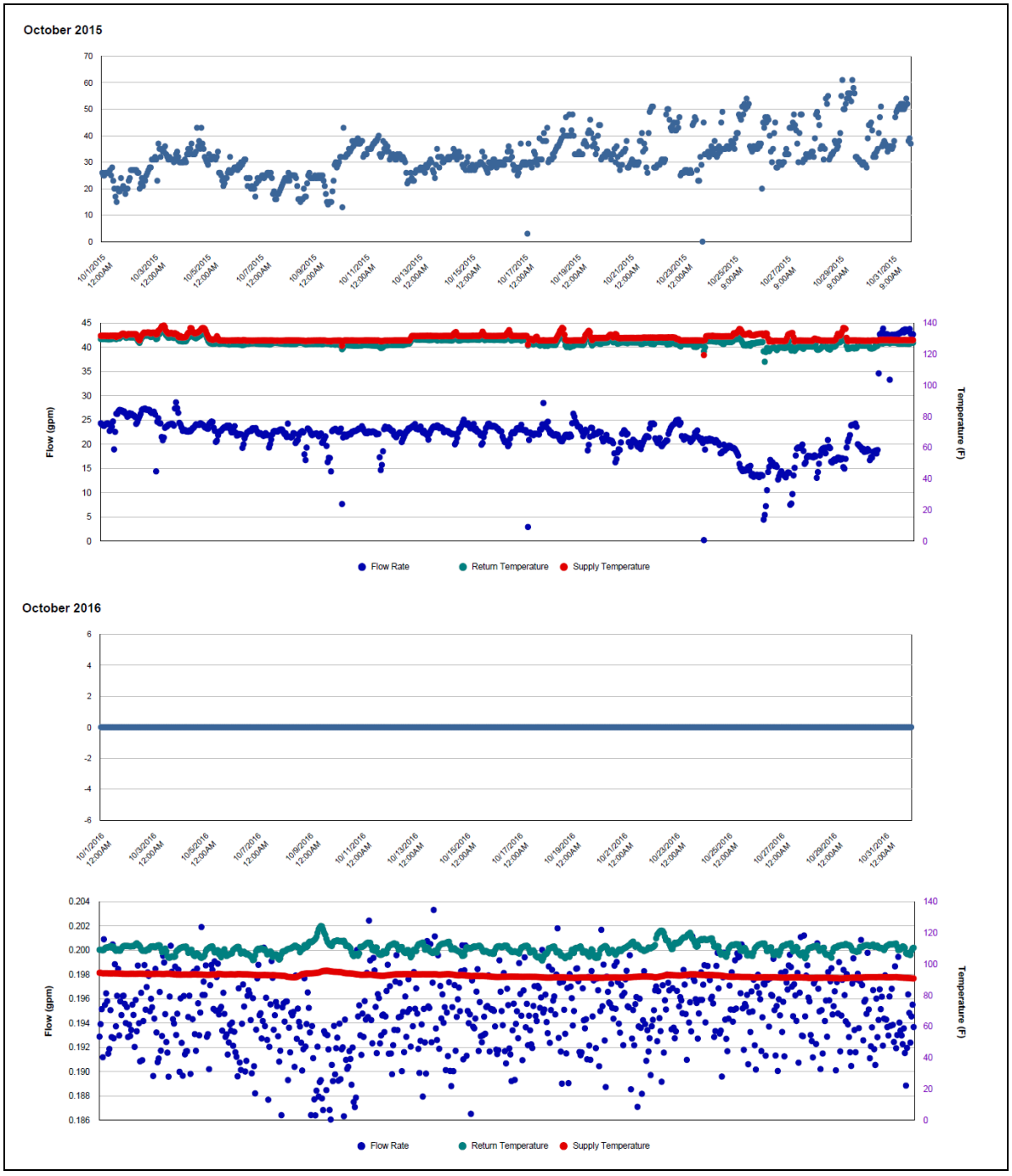
Quantitative descriptions and comments

The HHW flow rate has been zero or near zero since May 2016. The HHW flow rate averaged around 22.5 gpm for most of October 2015. The October 2016 consumption is estimated by a model.

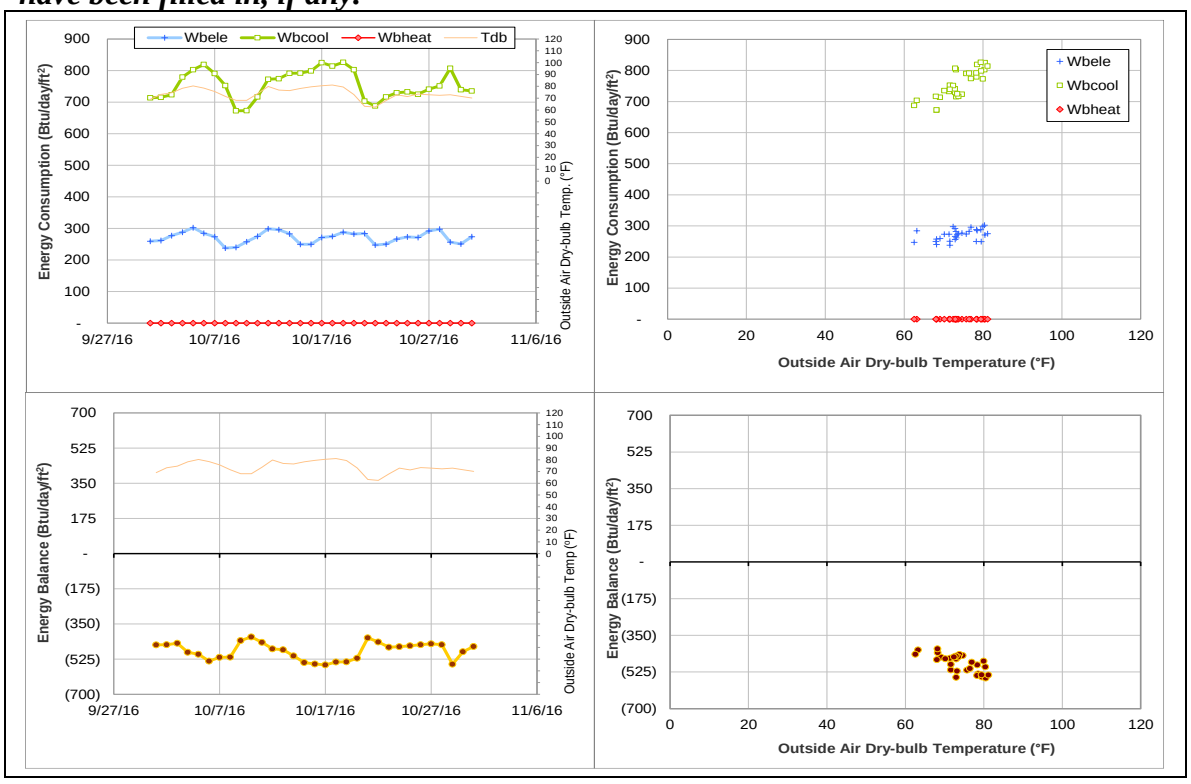
Explanatory Figure: 13 months energy balance plot with original data



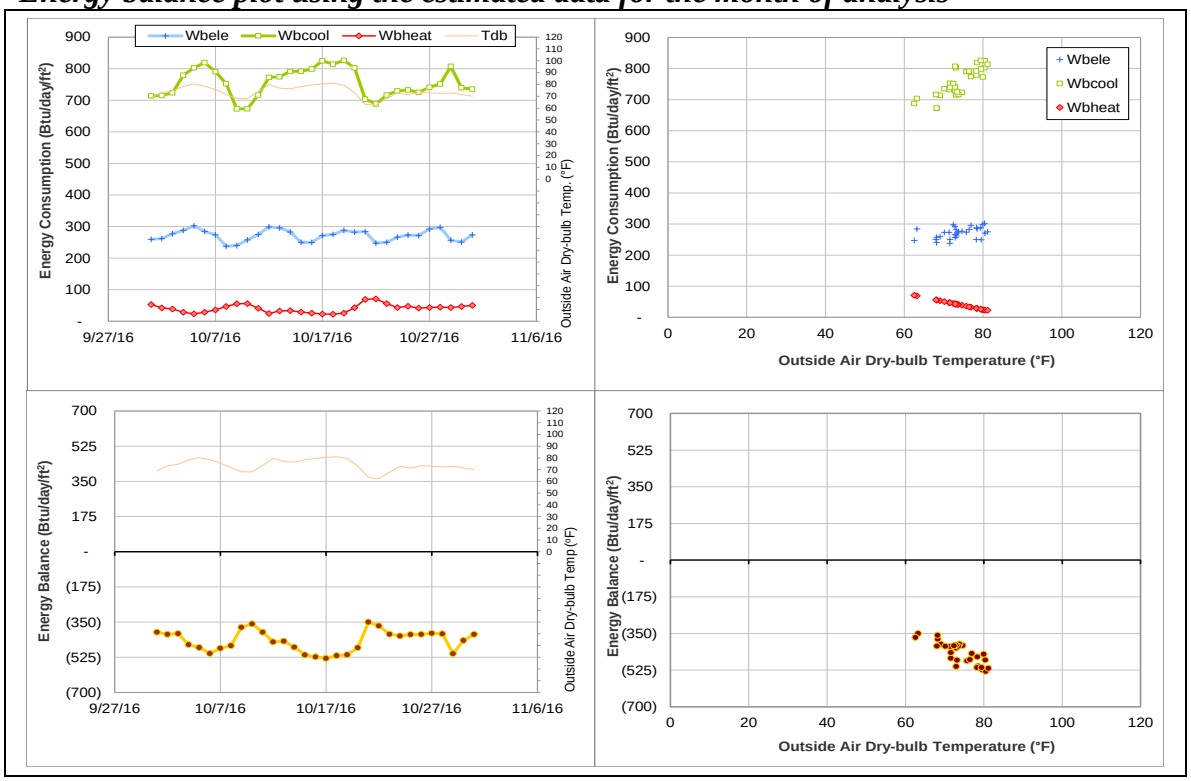
Explanatory Figure: Time series plots of hourly HHW energy consumption, flow rate, and supply and return temperatures from utilities office. (top: October 2015, bottom: October 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis



TVMC-Small Animal Building (TAMU Bldg #880)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
CHW	005958	17	10/1/2016 – 10/17/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The CHW consumption level has decreased.	4/1/2016 – 10/17/2016

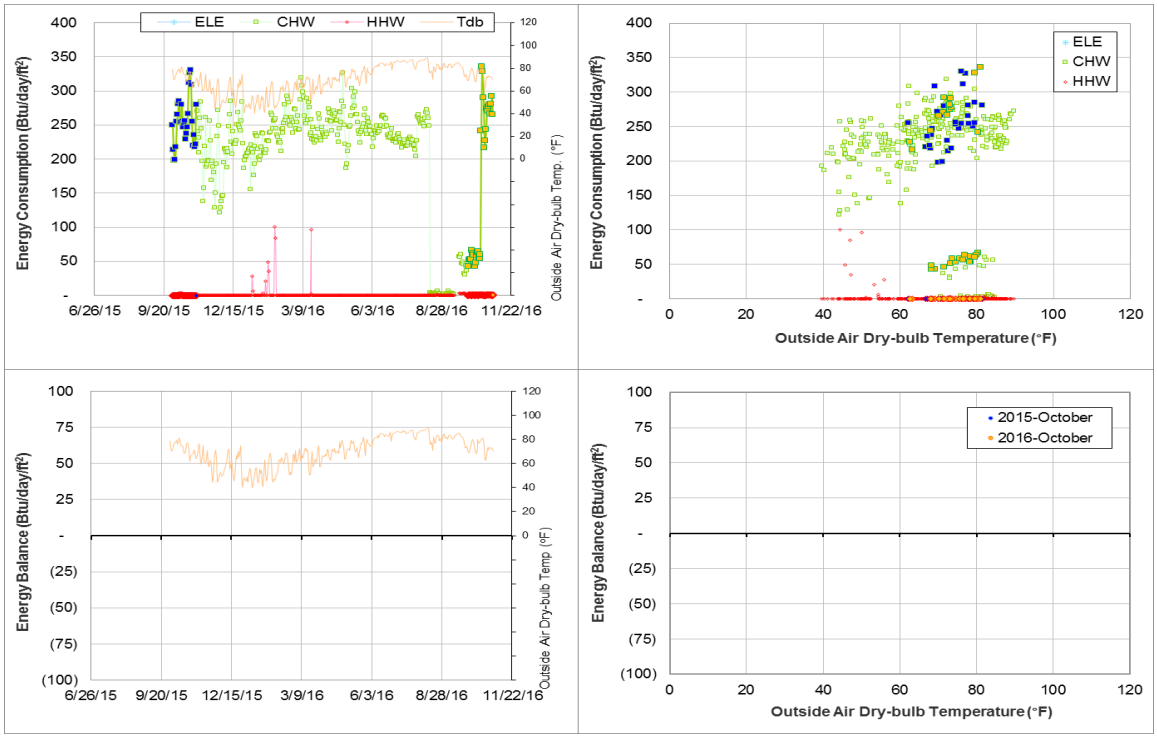
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
CHW	005958	10/1/2016 – 10/17/2016	Delta-T	Small

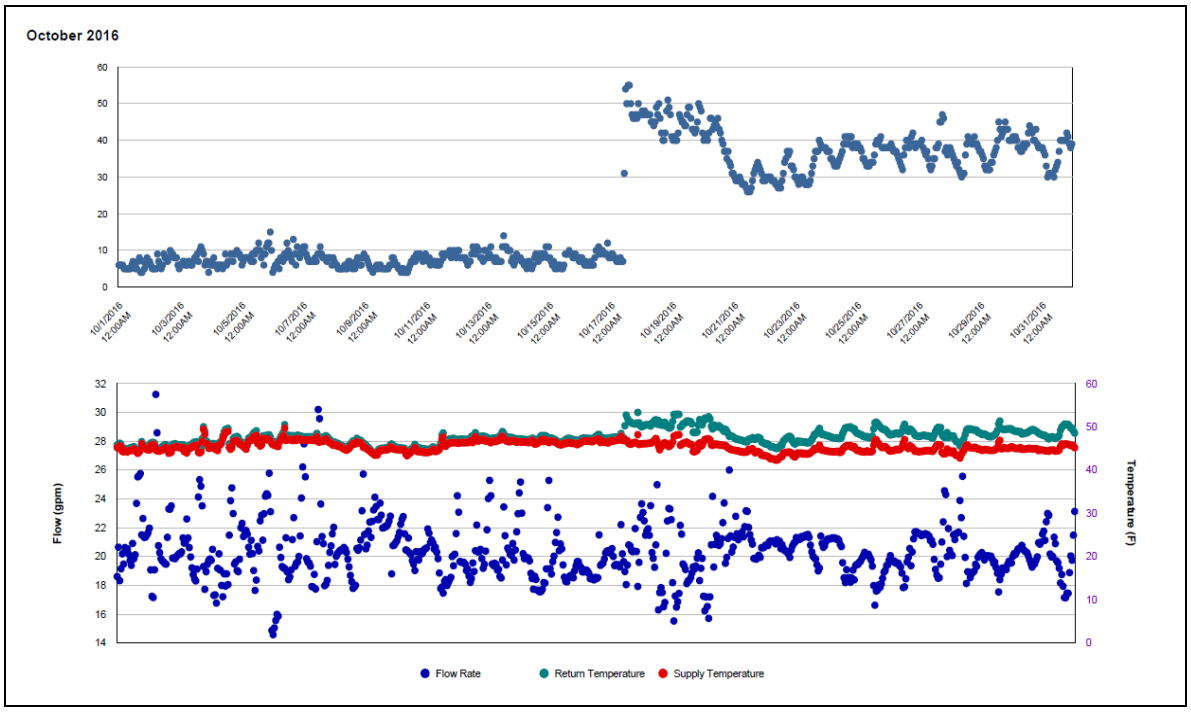
Quantitative descriptions and comments

The monthly CHW consumption has been decreasing since April. The recent energy consumption pattern has flattened out in higher temperatures. When comparing the consumption levels for April through early August, they are at the same consumption level as Feb and Mar. It looks like the Delta-T has not increased since winter, almost half of what it was last summer, and on 8/15/2016 the Delta-T decreased again but to near zero values. On 9/16/2016 the Delta-T increased but only by a little. This small Delta-T continued until 10/17/2016. The CHW for October prior to the 17th has been estimated by model.

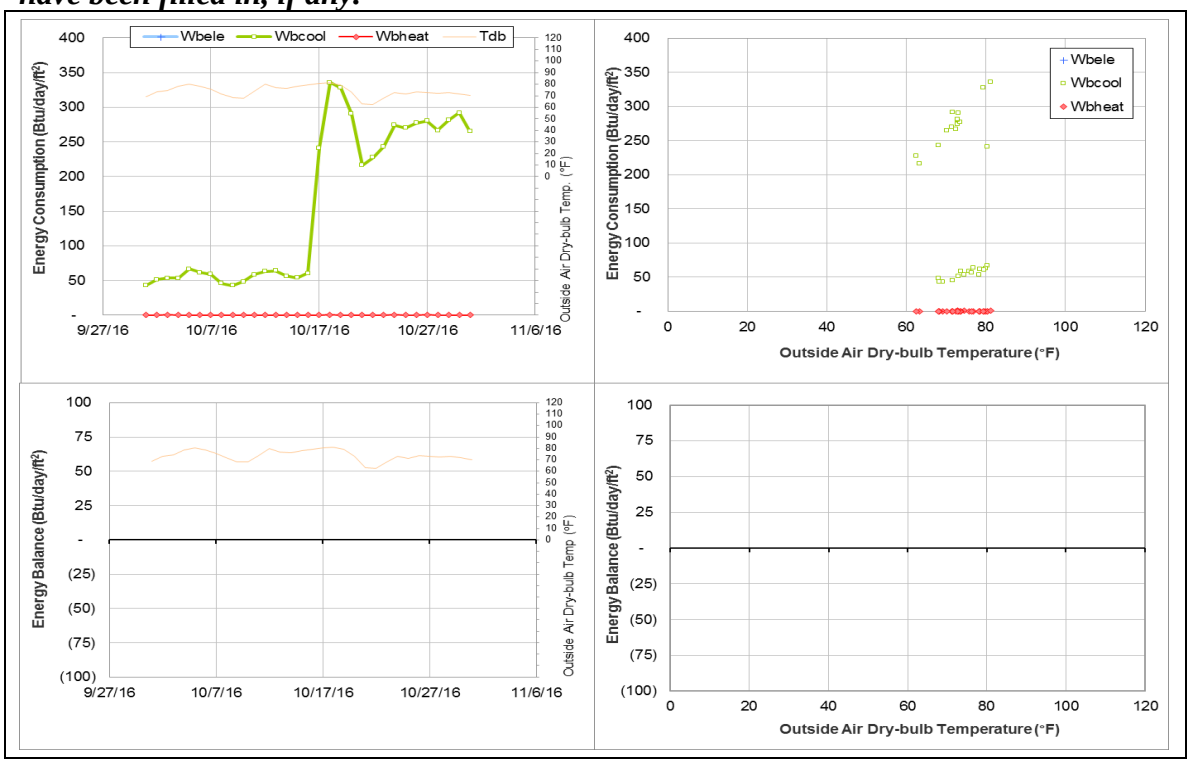
Explanatory Figure: 13 months energy balance plot with original data



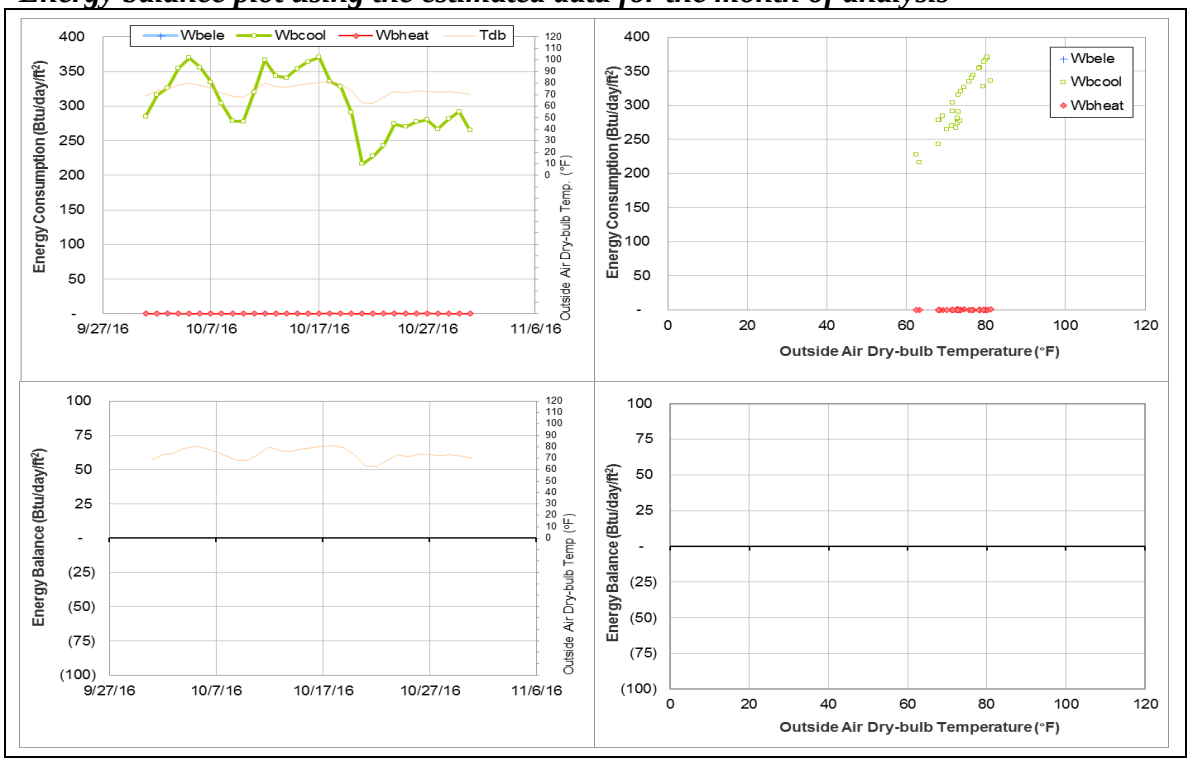
Explanatory Figure: Time series plots of hourly CHW energy consumption, flow rate, and supply and return temperatures from utilities office. (October 2016)



Energy balance plot using the original data for the month of analysis. Missing data have been filled in, if any.



Energy balance plot using the estimated data for the month of analysis



Texas Vet Med Diagnostic Lab (TAMU Bldg #1041)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
ELE	001539	31	10/1/2016 – 10/31/2016	A multiplicative factor of 1/1000

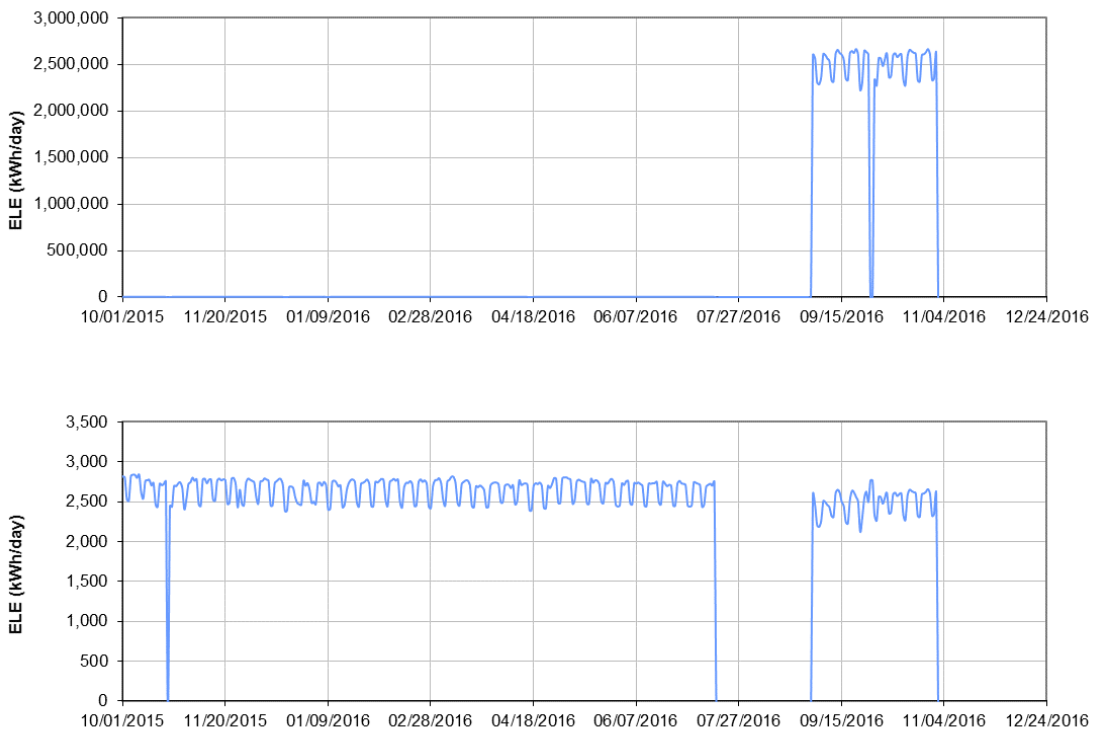
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
ELE	The ELE consumption level has increased greatly.	9/1/2016 – 10/31/2016

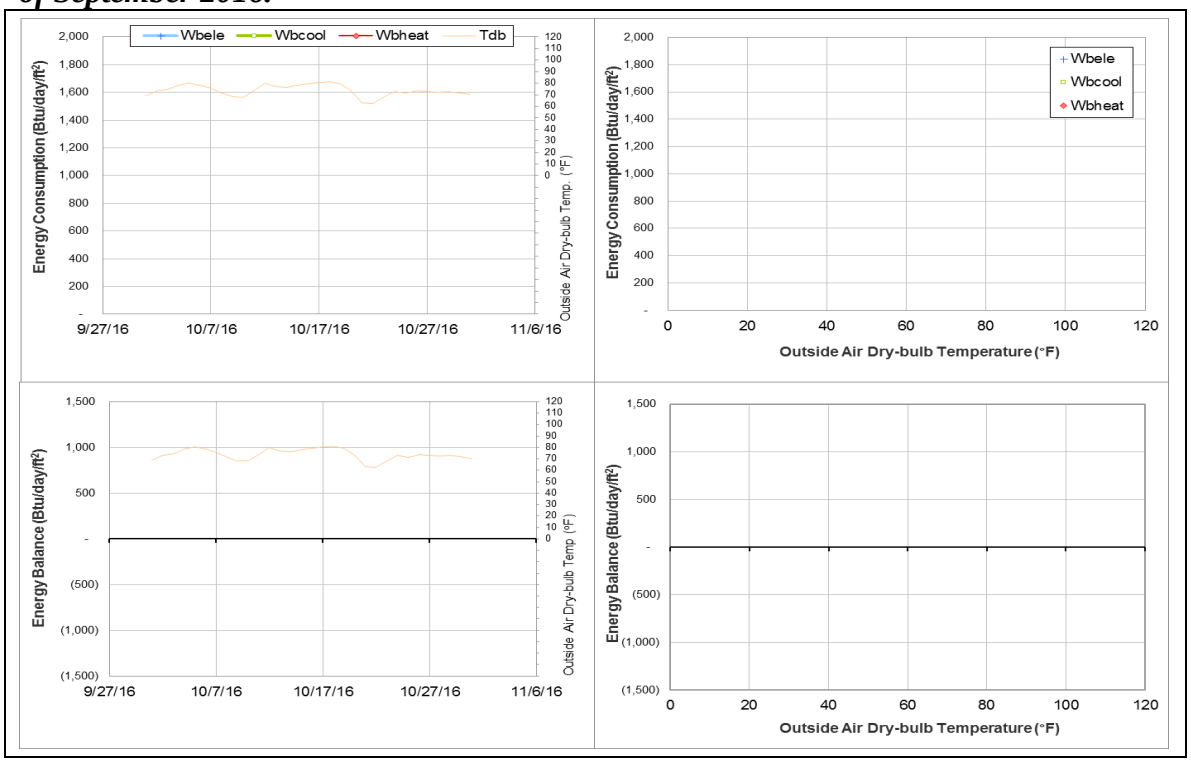
Quantitative descriptions and comments

The electricity consumption for meter #001539 during 9/1/2016 – 10/31/2016 has increased greatly, almost 1000 times greater than what is expected. This could possibly be due to a unit setting. The below explanatory figures help to illustrate the issue. Note the increase during Sep and Oct 2016 to around 2,500,000 kWh/day whereas the previous months were around 2,500 kWh/day (top explanatory figure). After applying a multiplicative factor of 1/1000, the estimated kWh/day is within a similar range as previous months (bottom explanatory figure).

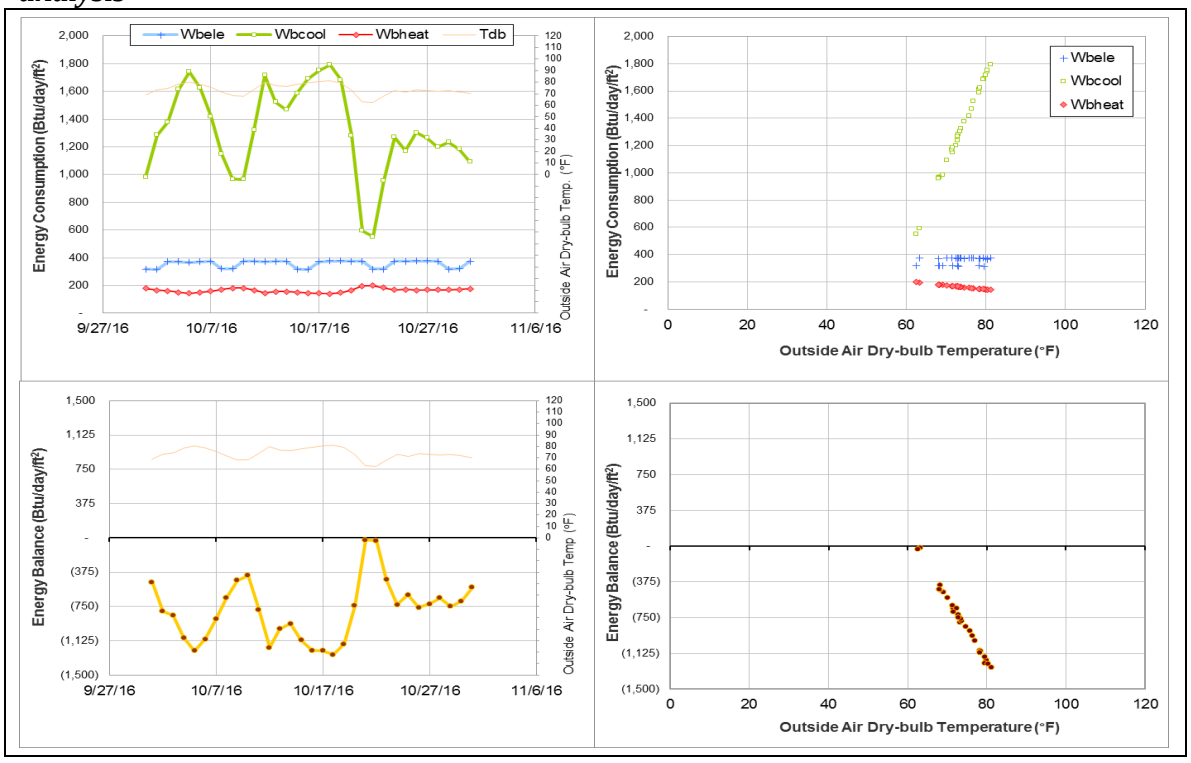
Explanatory Figure: Time series plot of original daily ELE for meter #001539 from Oct 2015 through Oct 2016. The top time series plot shows the original data for Sep and Oct 2016. The bottom time series plot shows the estimated data for Sep and Oct 2016.



Energy balance plot using the original ELE, CHW and HHW data for the month of analysis. Note CHW, HHW, and one of the ELE meters is missing data for the month of September 2016.



Energy balance plot using the estimated ELE, CHW and HHW data for the month of analysis



Heep Center (TAMU Bldg #1502)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	002603	14	10/4/2016 – 10/17/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The HHW consumption level decreased to near zero.	10/4/2016 – 10/17/2016

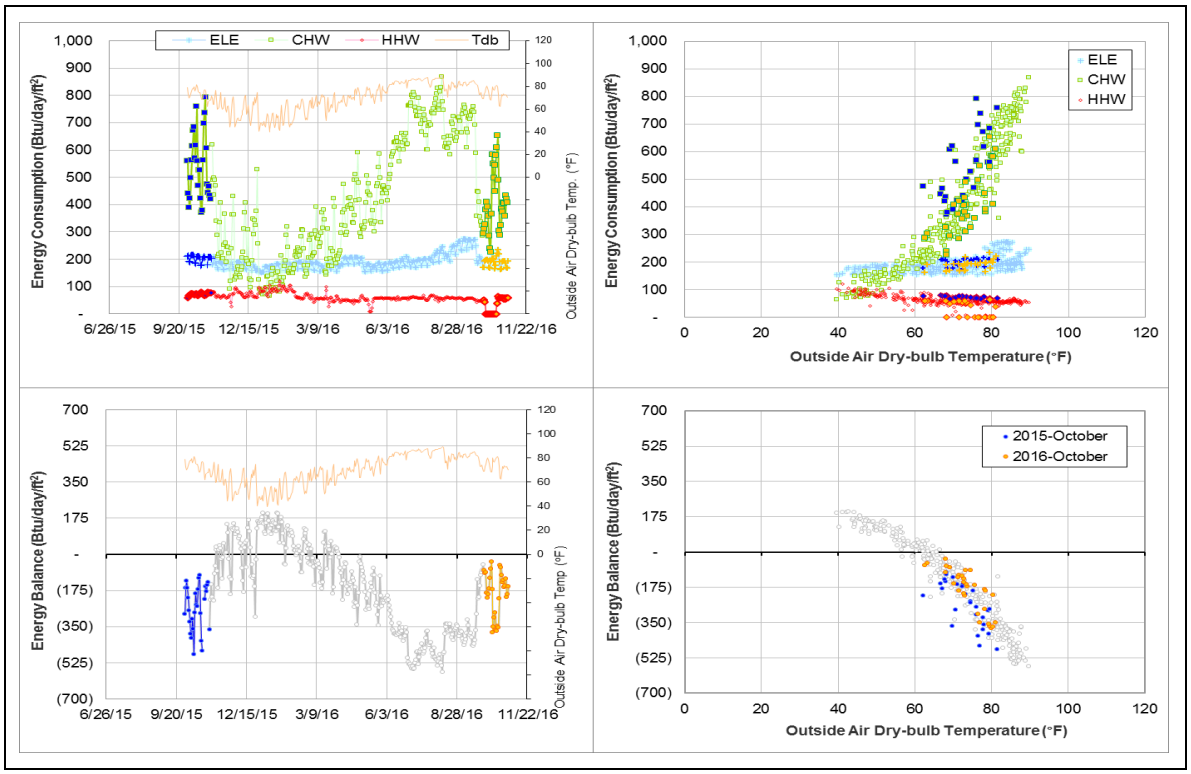
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	002603	10/4/2016 – 10/17/2016	Delta-T	Negative
			Flow rate	Near zero

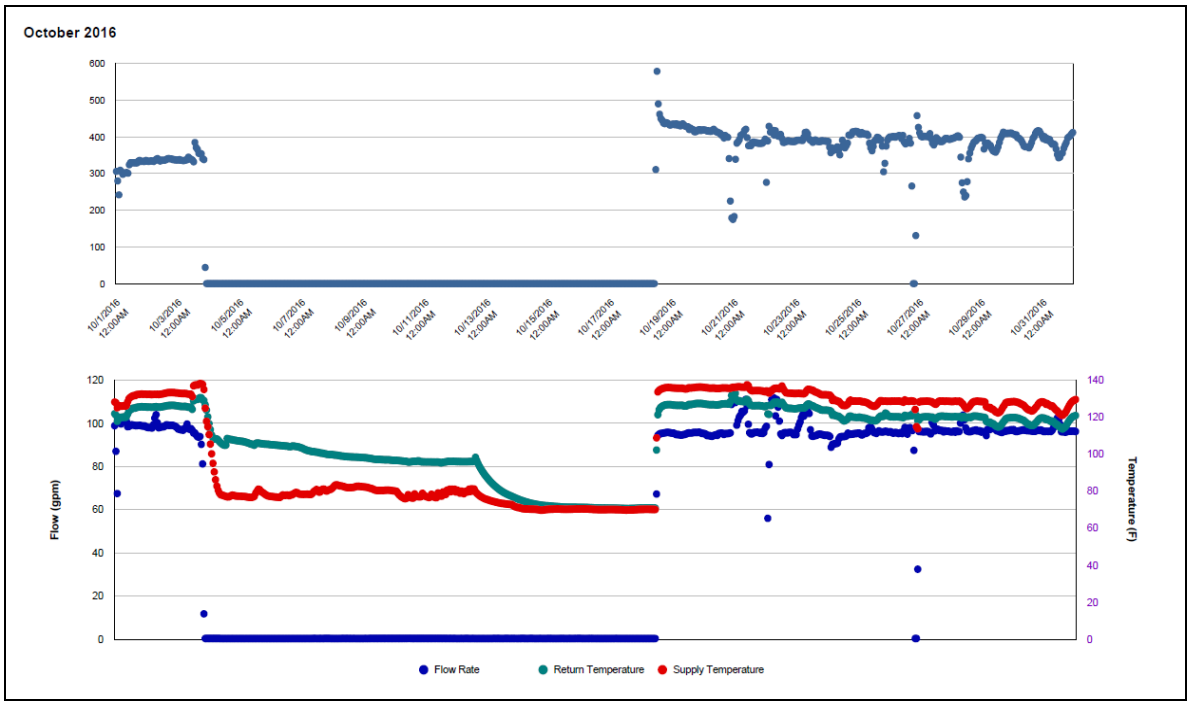
Quantitative descriptions and comments

For the period of 10/4/2016 – 10/17/2016 the flow rate decreased to near zero values and the supply and return temperatures dropped creating a negative Delta-T. The HHW was estimated by model for this period.

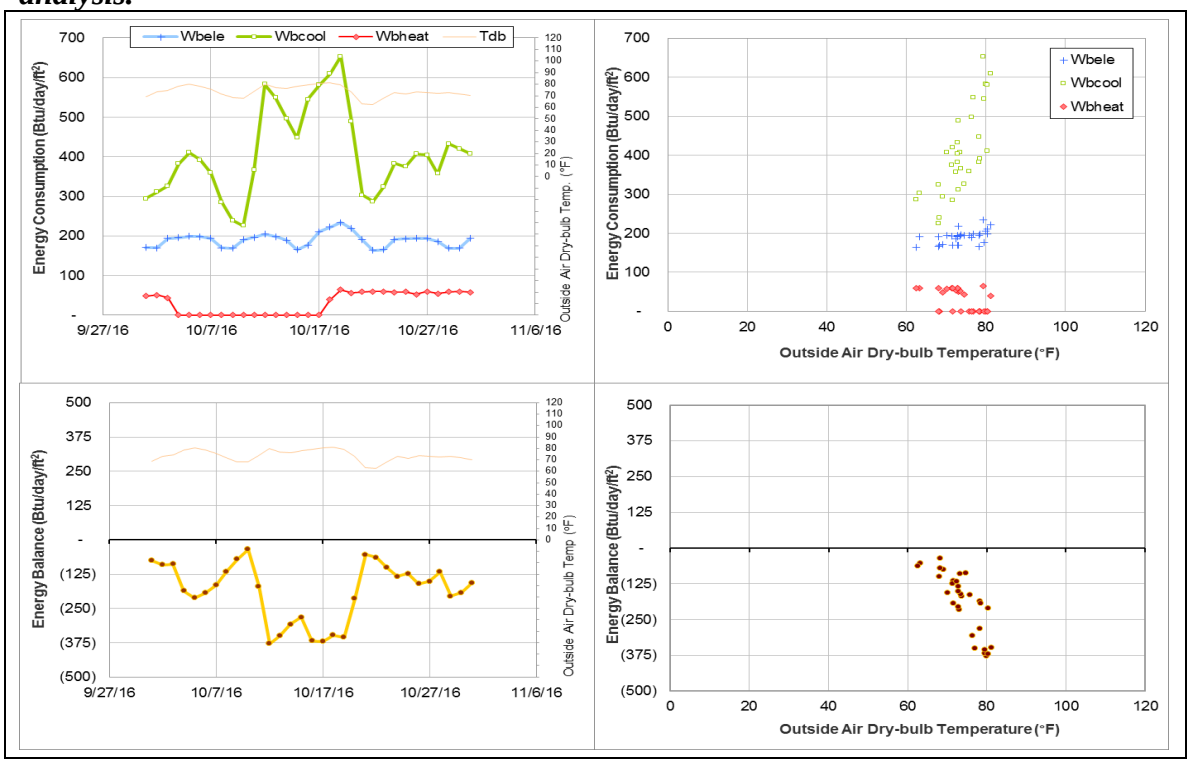
Explanatory Figure: 13 months energy balance plot with original data



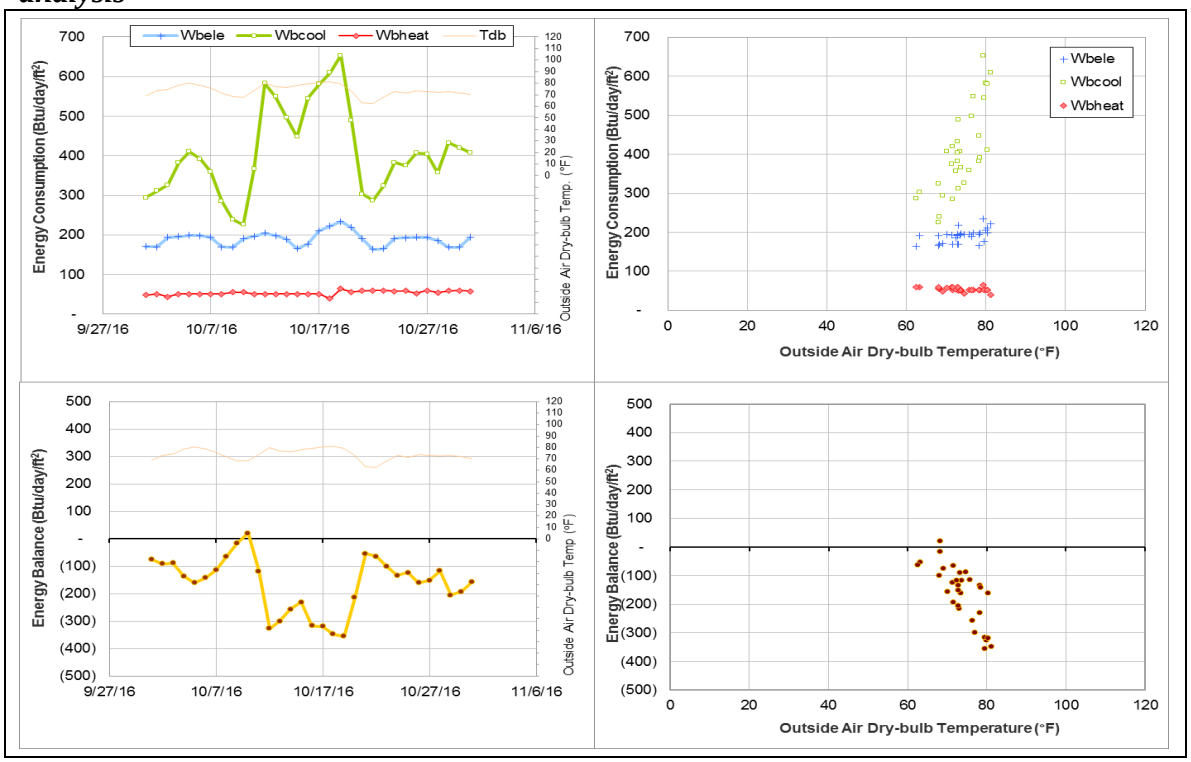
Explanatory Figure: Time series plots of hourly HHW energy consumption, flow rate, and supply and return temperatures from utilities office. (October 2016)



Energy balance plot using the original ELE, CHW and HHW data for the month of analysis.



Energy balance plot using the estimated ELE, CHW and HHW data for the month of analysis



Rosenthal Meat Science & Technology (TAMU Bldg #1505)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	002577	30	10/1/2016 – 10/30/2016	Model

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The HHW consumption level has increased greatly.	9/6/2016 – 10/30/2016

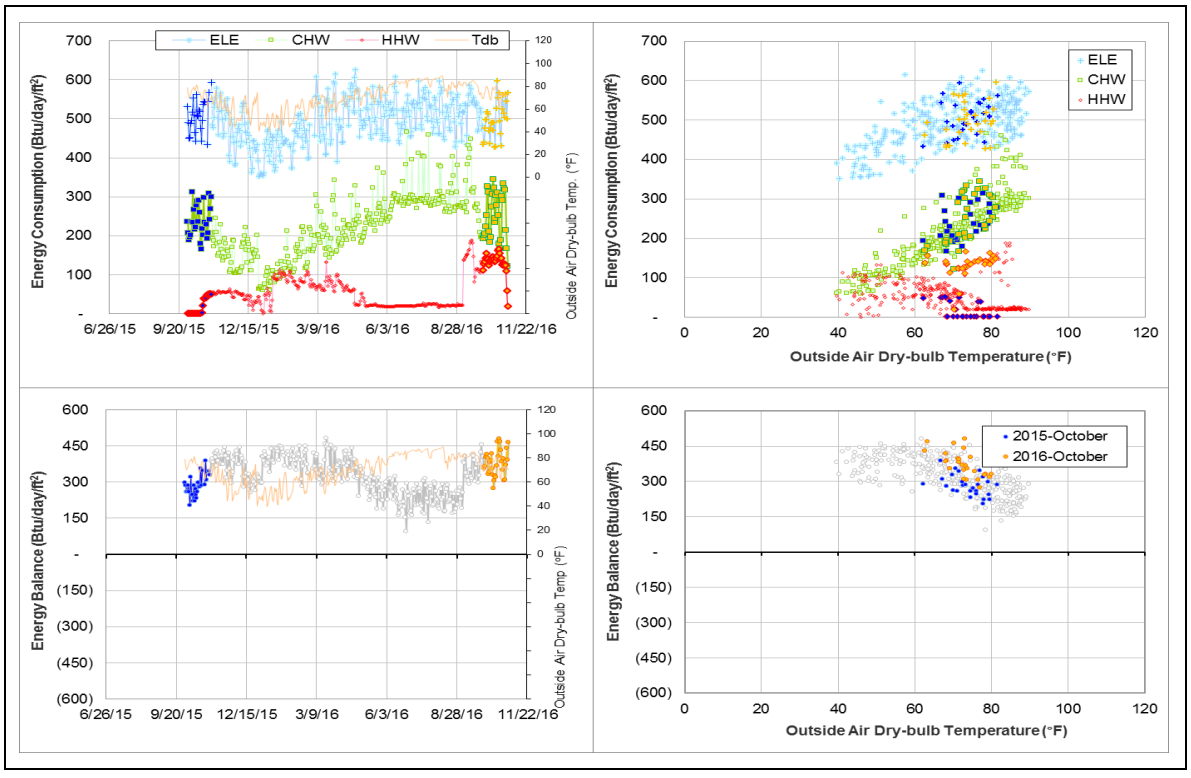
Changes in sensor readings related to the detected issues

Energy Type	Meter ID	Period	Type	Description
HHW	002577	9/6/2016 – 10/30/2016	Delta-T	Near zero

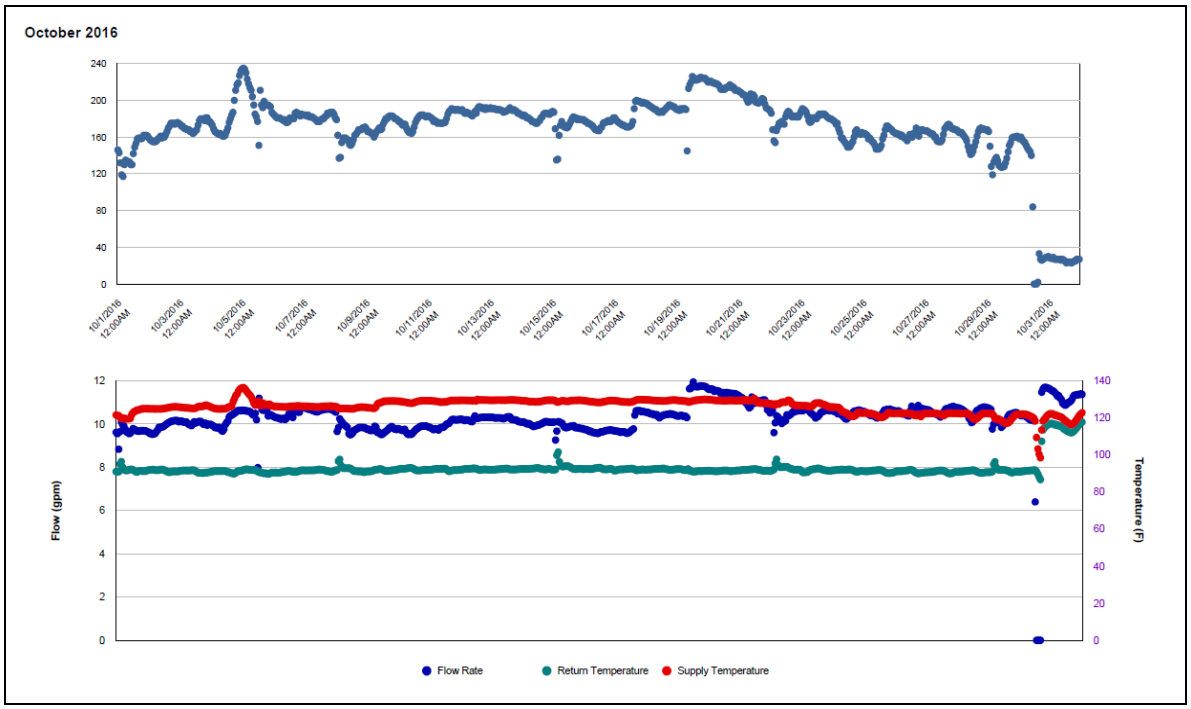
Quantitative descriptions and comments

The Delta-T for HHW meter #002577 experienced a large increase from 5°F to a 25-35°F range starting 9/6/2016 and continuing through 10/30/2016. After 10/30/2016, the Delta-T dropped back to 5°F. The HHW consumption for the affected period in October was estimated by model.

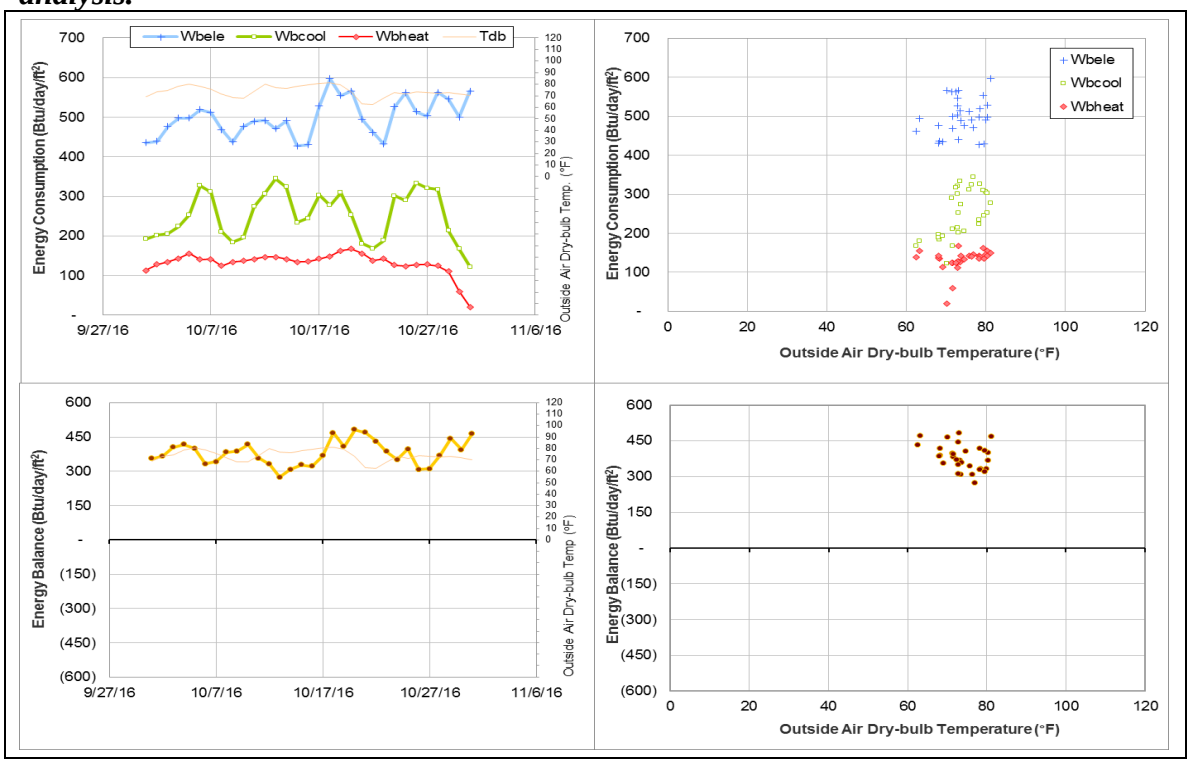
Explanatory Figure: 13 months energy balance plot with original data



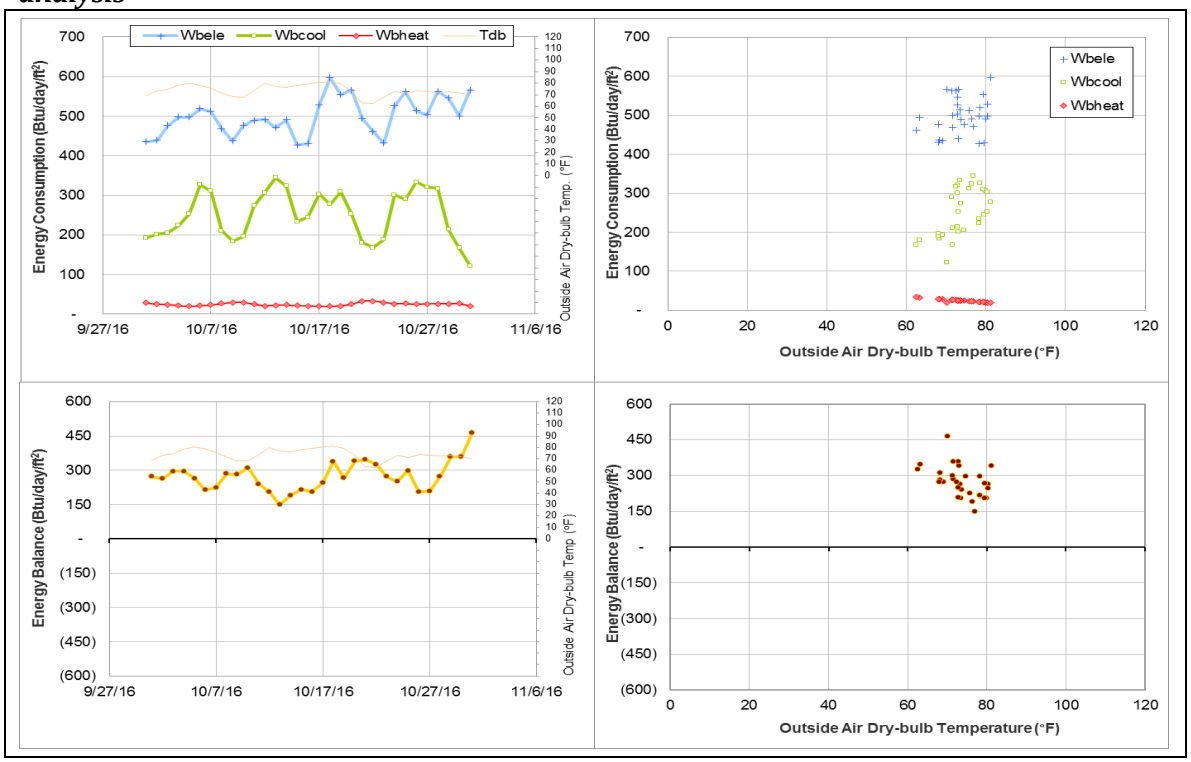
Explanatory Figure: Time series plots of hourly HHW energy consumption, flow rate, and supply and return temperatures from utilities office. (October 2016)



Energy balance plot using the original ELE, CHW and HHW data for the month of analysis.



Energy balance plot using the estimated ELE, CHW and HHW data for the month of analysis



Southern Crop Improvement Greenhouse (TAMU Bldg #1512)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
ELE	005931	3	10/20/2016 – 10/22/2016	Model

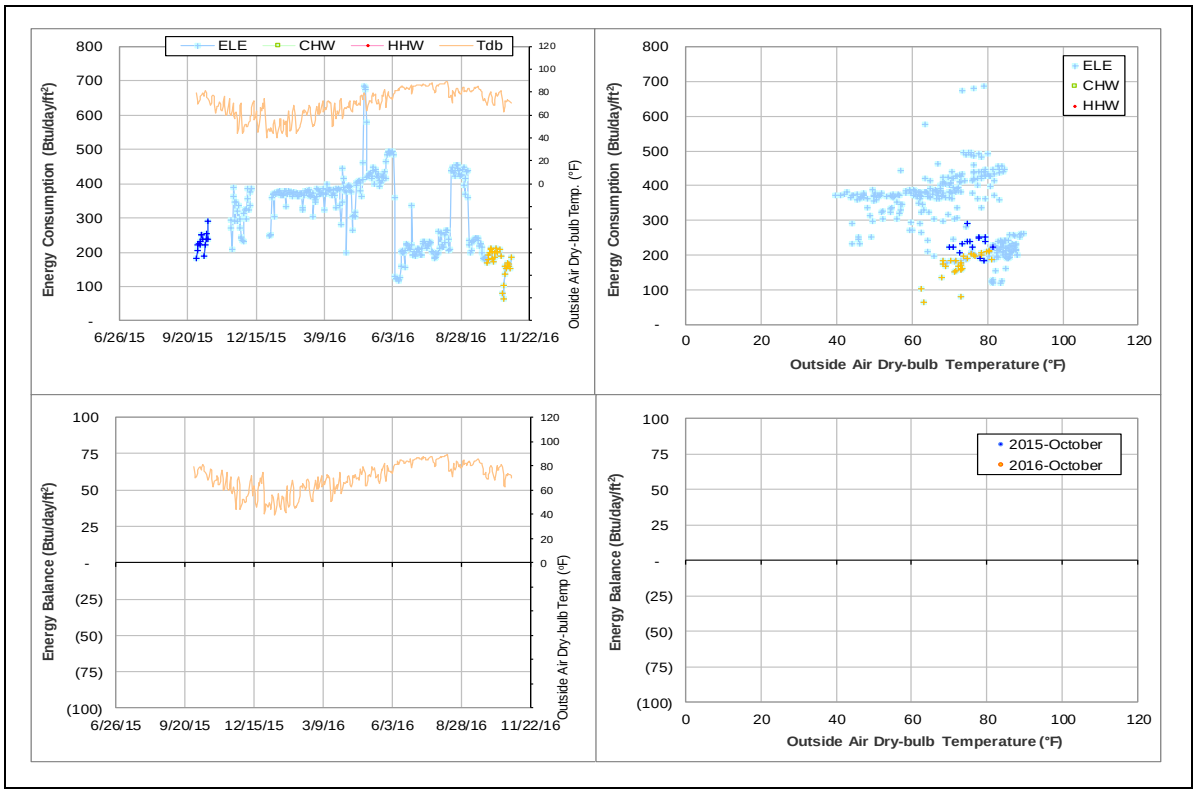
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
ELE	The consumption dropped for a short period.	10/20/2016 – 10/22/2016

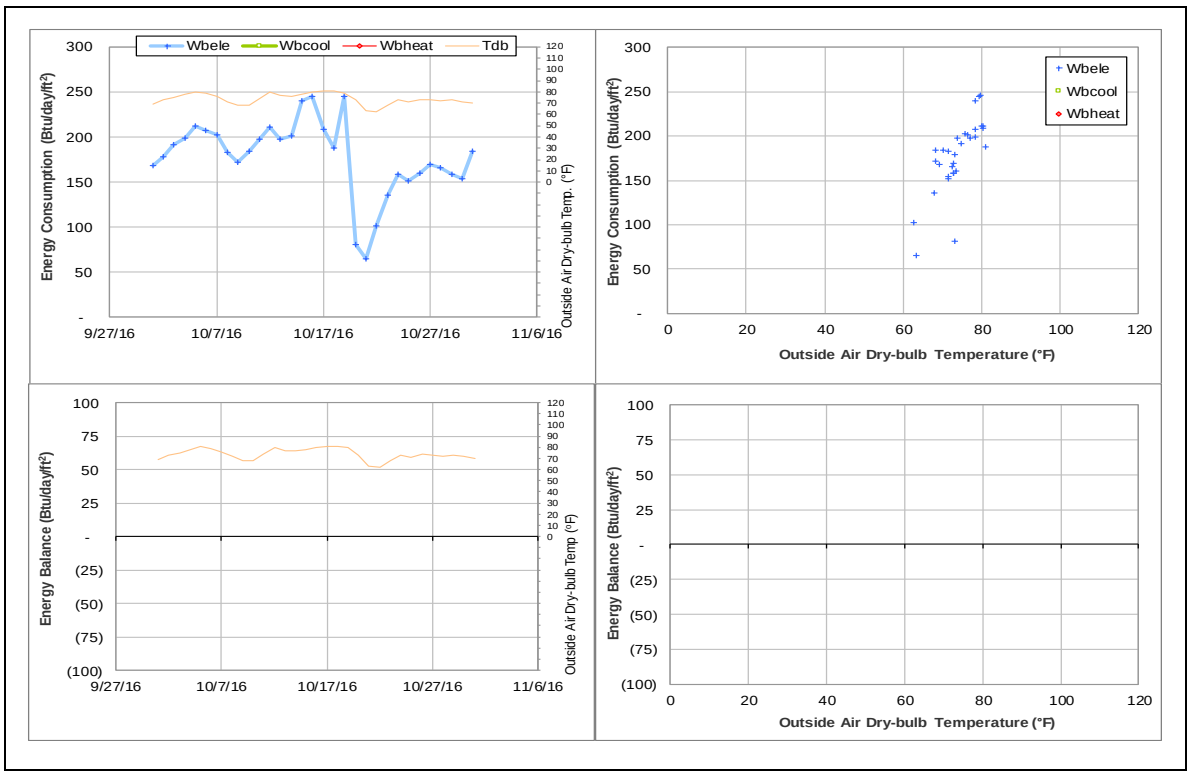
Quantitative descriptions and comments

The electricity consumption level changed frequently since July 2015. The consumption dropped for a short period during 10/20/2016 – 10/22/2016 and it was estimated by a model based on the data during 7/1/2014 – 6/30/2015.

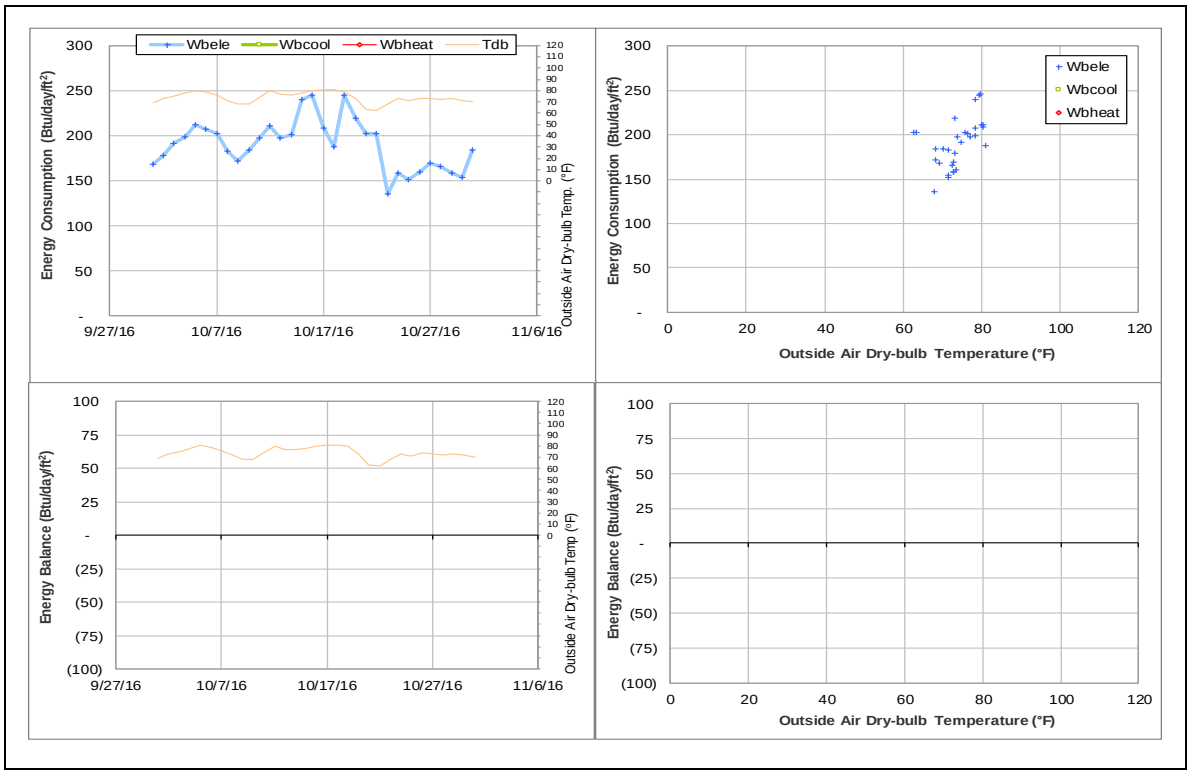
Explanatory Figure: 13 months energy balance plot with original data



Energy balance plot using the original data for the month of analysis.



Energy balance plot using the estimated data for the month of analysis



TX School of Rural Public Health (TAMU Bldg # 1518, 1519, 1520)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
ELE	005274	31	10/1/2016 – 10/31/2016	Switch with 005275
ELE	005275	31	10/1/2016 – 10/31/2016	Switch with 005274

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
ELE (005274)	The consumption level increased largely.	8/14/2015 - ongoing
ELE (005275)	The consumption level decreased largely.	8/14/2015 - ongoing

Comments

ELE meter (ID# 005274) is serve for TX School of Rural Public Health B and ELE meter (ID# 005275) is for TX School of Rural Public Health C.

The ELE consumption levels for these two meters have a sudden change on 8/14/2015. The consumption level for meterID 005274 increased by approximate 80 kWh/h (~ 100%) and the consumption level for meter ID 005275 decreased by around 80 kWh/h (~50%).

It was observed that the cumulative reading for these two meters switched on 8/14/2015 12:00 AM. It is suggested to investigate these two meters.

Explanatory Figure: The time series plot of hourly electricity consumption for two ELE meters #005274 and# 005275

Time	Cumulative reading	Hourly Consumption	MeterID		Time	Cumulative reading	Hourly Consumption	MeterID
08/13/2015 12:00:00 PM	2930884.013	84.262	005274		08/13/2015 12:00:00 PM	4741958.002	170.658	005275
08/13/2015 01:00:00 PM	2930968.589	84.576	005274		08/13/2015 01:00:00 PM	4742132.336	174.334	005275
08/13/2015 02:00:00 PM	2931051.959	83.37	005274		08/13/2015 02:00:00 PM	4742303.554	171.218	005275
08/13/2015 03:00:00 PM	2931146.799	94.84	005274		08/13/2015 03:00:00 PM	4742483.683	180.129	005275
08/13/2015 04:00:00 PM	2931240.505	93.706	005274		08/13/2015 04:00:00 PM	4742662.753	179.07	005275
08/13/2015 05:00:00 PM	2931324.169	83.664	005274		08/13/2015 05:00:00 PM	4742832.009	169.256	005275
08/13/2015 06:00:00 PM	2931399.91	75.741	005274		08/13/2015 06:00:00 PM	4742993.53	161.521	005275
08/13/2015 07:00:00 PM	2931472.181	72.271	005274		08/13/2015 07:00:00 PM	4743149.675	156.145	005275
08/13/2015 08:00:00 PM	2931543.838	71.657	005274		08/13/2015 08:00:00 PM	4743305.9	156.225	005275
08/13/2015 09:00:00 PM	2931613.306	69.468	005274		08/13/2015 09:00:00 PM	4743462.097	156.197	005275
08/13/2015 10:00:00 PM	2931672.706	59.4	005274		08/13/2015 10:00:00 PM	4743610.221	148.124	005275
08/13/2015 11:00:00 PM	2931733.072	60.366	005274		08/13/2015 11:00:00 PM	4743745.645	135.424	005275
08/14/2015 12:00:00 AM	4743876.03	130.385	005274		08/14/2015 12:00:00 AM	2931791.19	58.118	005275
08/14/2015 01:00:00 AM	4744008.406	132.376	005274		08/14/2015 01:00:00 AM	2931849.35	58.16	005275
08/14/2015 02:00:00 AM	4744141.74	133.334	005274		08/14/2015 02:00:00 AM	2931908.534	59.184	005275
08/14/2015 03:00:00 AM	4744272.553	130.813	005274		08/14/2015 03:00:00 AM	2931966.686	58.152	005275
08/14/2015 04:00:00 AM	4744404.045	131.492	005274		08/14/2015 04:00:00 AM	2932023.589	56.903	005275
08/14/2015 05:00:00 AM	4744534.38	130.335	005274		08/14/2015 05:00:00 AM	2932080.05	56.461	005275
08/14/2015 06:00:00 AM	4744667.111	132.731	005274		08/14/2015 06:00:00 AM	2932137.05	57	005275
08/14/2015 07:00:00 AM	4744820.038	152.927	005274		08/14/2015 07:00:00 AM	2932232.983	95.933	005275
08/14/2015 08:00:00 AM	4744972.221	152.183	005274		08/14/2015 08:00:00 AM	2932319.162	86.179	005275
08/14/2015 09:00:00 AM	4745134.467	162.246	005274		08/14/2015 09:00:00 AM	2932404.691	85.529	005275
08/14/2015 10:00:00 AM	4745308.905	174.438	005274		08/14/2015 10:00:00 AM	2932489.976	85.285	005275
08/14/2015 11:00:00 AM	4745476.832	167.927	005274		08/14/2015 11:00:00 AM	2932564.419	74.443	005275
08/14/2015 12:00:00 PM	4745634.44	157.608	005274		08/14/2015 12:00:00 PM	2932634.064	69.645	005275
08/14/2015 01:00:00 PM	4745789.345	154.905	005274		08/14/2015 01:00:00 PM	2932704.723	70.659	005275
08/14/2015 02:00:00 PM	4745949.369	160.024	005274		08/14/2015 02:00:00 PM	2932777.373	72.65	005275
08/14/2015 03:00:00 PM	4746110.346	160.977	005274		08/14/2015 03:00:00 PM	2932845.908	68.535	005275
08/14/2015 04:00:00 PM	4746270.903	160.557	005274		08/14/2015 04:00:00 PM	2932920.525	74.617	005275
08/14/2015 05:00:00 PM	4746431.347	160.444	005274		08/14/2015 05:00:00 PM	2932996.835	76.31	005275
08/14/2015 06:00:00 PM	4746586.415	155.068	005274		08/14/2015 06:00:00 PM	2933065.518	68.683	005275
08/14/2015 07:00:00 PM	4746727.476	141.061	005274		08/14/2015 07:00:00 PM	2933127.559	62.041	005275
08/14/2015 08:00:00 PM	4746864.372	136.896	005274		08/14/2015 08:00:00 PM	2933195.384	67.825	005275
08/14/2015 09:00:00 PM	4747004.372	140	005274		08/14/2015 09:00:00 PM	2933263.632	68.248	005275
08/14/2015 10:00:00 PM	4747137.886	133.514	005274		08/14/2015 10:00:00 PM	2933323.26	59.628	005275
08/14/2015 11:00:00 PM	4747269.569	131.683	005274		08/14/2015 11:00:00 PM	2933382.3	59.04	005275

Texas Institute for Genomic Medicine (TAMU Bldg #1900)

Estimated data

Energy Type	Meter ID	Number of Days	Period	Estimation Method
HHW	005546	22	10/5/2016, 10/11/2016 – 10/31/2016	Model

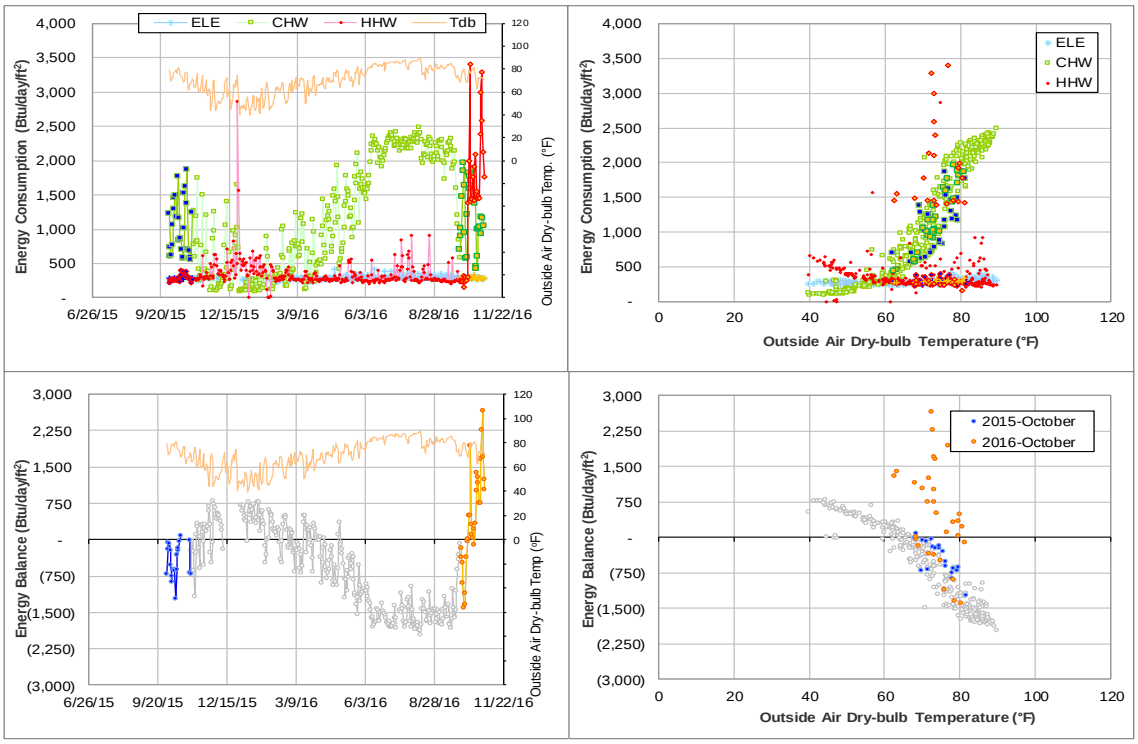
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The consumption dropped for a short period.	10/5/2016
	The consumption increased to extremely high level and the metered value seemed to be faulty.	10/11/2016 – Ongoing

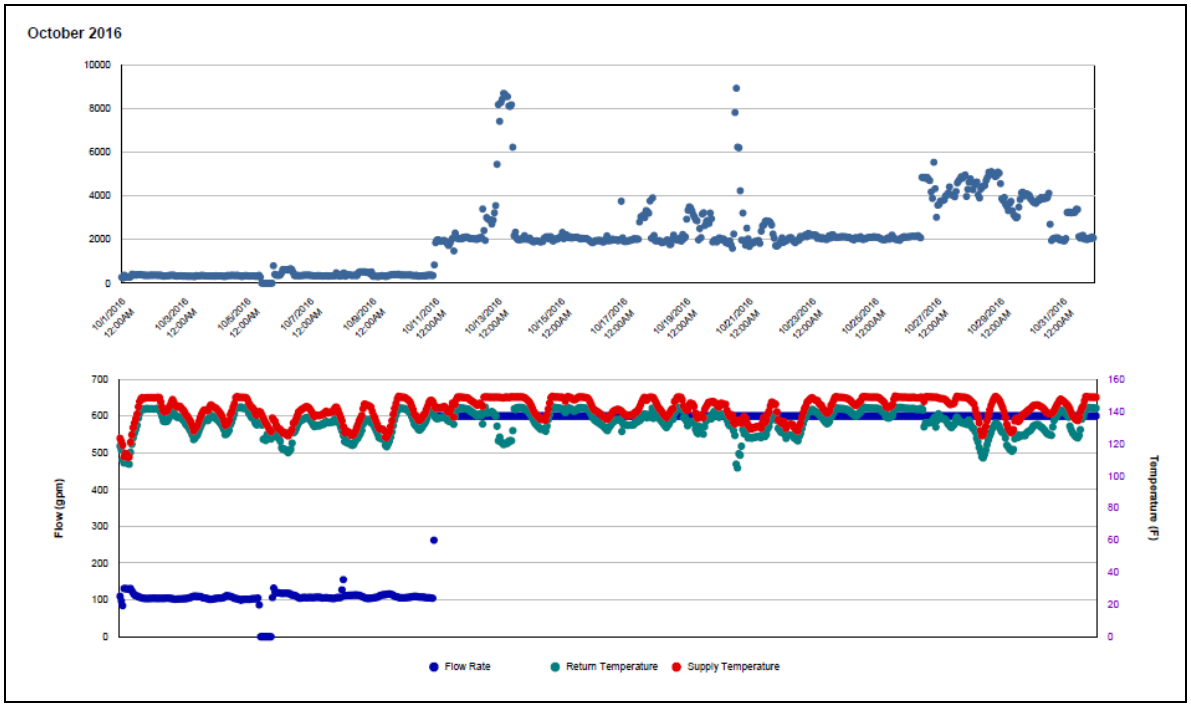
Quantitative descriptions and comments

The HHW consumption dropped for a short period on 10/5/2016. Then it increased to extremely high level after 10/11/2016 and the metered value seemed to be faulty. The flow rate increased and maintained at a constant value during these period. The questionable consumption was estimated by a model.

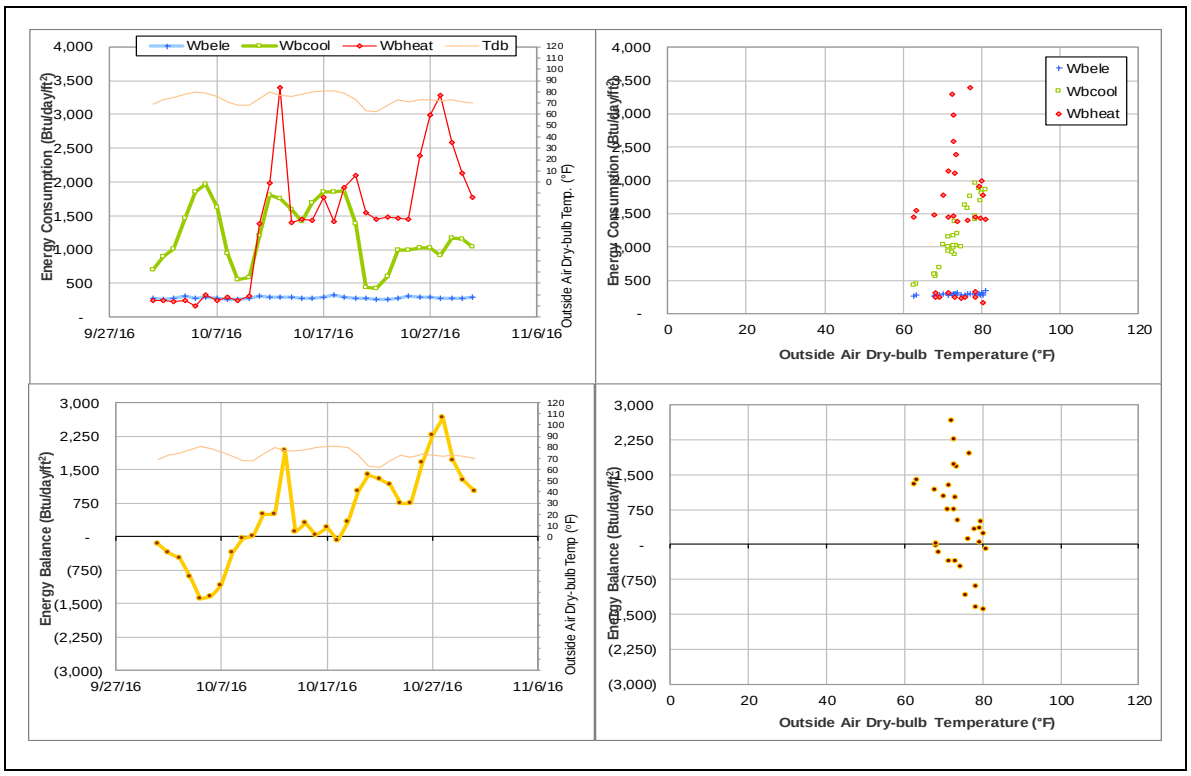
Explanatory Figure: 13 months energy balance plot with original data



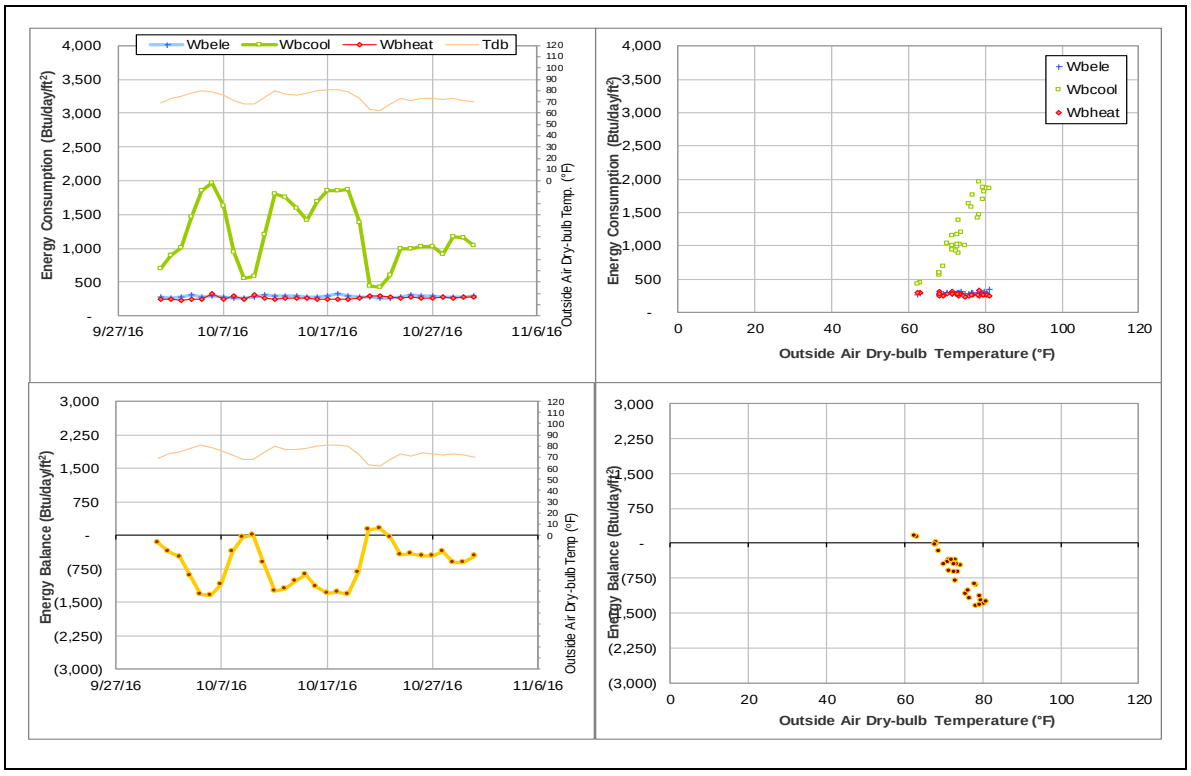
Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during October 2016)



Energy balance plot using the original data for the month of analysis.



Energy balance plot using the estimated data for the month of analysis



II-3 Meters with Significant Issues in Energy Consumption Data

In this section, significant issues in the data behavior are described. On the contrary to the section II–2, alternative consumption is not estimated for some reasons: presence of continuous problems since the beginning of the data acquisition, unbalanced energy uses in the past data, changes in the consumption patterns without evidence of data problems, etc. Table II–3 gives a list of meters included in this section.

Table II-3 Meters with significant issues in the consumption data during October 2016

Building No.	Building Name	MeterID	Type
0290	Wells Residence Hall		
		001984	CHW
		001988	HHW
0291	Rudder Residence Hall		
		002132	CHW
		002136	HHW
0293	Appelt Residence Hall		
		002062	CHW
		002066	HHW
0353	Bright Aerospace Building		
		002746	CHW
0383	Koldus Building		
		002863	CHW
		002874	HHW
0387	Richardson Petroleum Engineering Building		
		005809	HHW
0419	Legett Residence Hall		
		000031	ELE
		002218	CHW
		002222	HHW
0433	Mosher Residence Hall		
		009083	ELE
		002485	CHW
		002489	HHW
0440	Commons Hall		
		009238	HHW
0441	Krueger Residence Hall		
		002504	CHW
		002500	HHW
0447	Aston Residence Hall		
		002474	CHW
0443	Oceanography & Meteorology Building		
		006388	CHW
		006392	HHW
0446	Rudder Theatre Complex		
		004297	CHW
		004309	HHW
0467	Biological Sciences Building - East		
		003851	CHW
		003862	HHW
0473	Williams Administration Building		
		007946	CHW
		007947	HHW
0478	Scoates Hall		
		007961	ELE
		007968	CHW
		007969	HHW

Building No.	Building Name	Mete	Type
0482	Fermier Hall		
		005878	CHW
		005881	HHW
0492	Civil Engineering Building		
		005950	CHW
		005954	HHW
0496	Utilities & Energy Services Central Office		
		007706	ELE
		006929	CHW
		006933	HHW
0499	Engineering Innovation Center		
		002672	CHW
		002683	HHW
0506	Nagle Hall		
		001484	ELE
		003619	CHW
		003623	HHW
0508	Veterinary Teaching Hospital		
		004170	HHW
0524	Blocker Building		
		002918	HHW
0652	Neely Residence Hall		
		002147	CHW
		002151	HHW
815	Entomology Research Lab		
		006043	CHW
880	TVMC-Small Animal Building		
		005962	HHW
1026	Veterinary Medicine Administration		
		006053	HHW
1156	Physical Plant Administration & Shops		
		007679	CHW
1194	Veterinary Large Animal Hospital		
		003652	HHW
1197	Veterinary Research Building		
		006355	ELE
		006359	ELE
1504	Reynolds Medical Sciences Building		
		003989	CHW
		003993	HHW
1601	International Ocean Discovery Building		
		006351	ELE
		006382	CHW
		008144	CHW
		008145	HHW
1604	Offshore Technology Research Center		
		006660	ELE

Wells Residence Hall (TAMU Bldg #290)

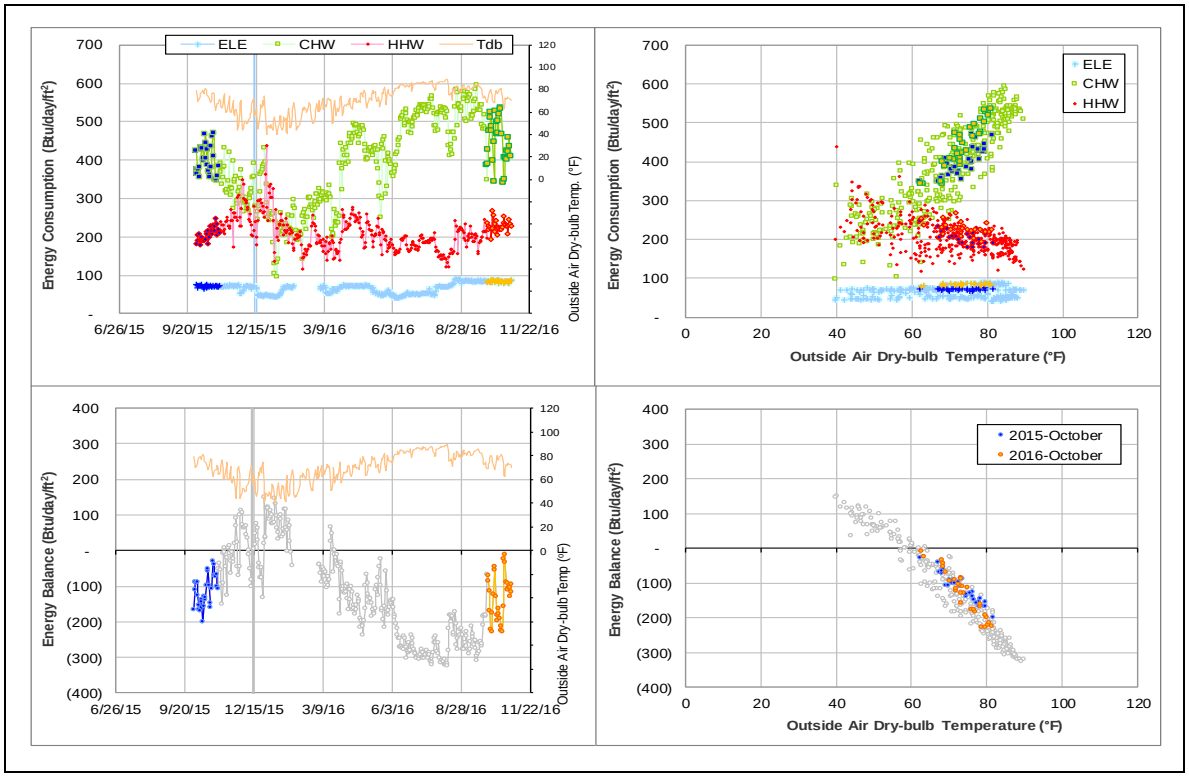
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW/HHW	Both the CHW and HHW consumption levels are higher than the same month of last year.	Since April 2016

Comments

Both the CHW and HHW consumption increased since the month of April 2016. The CHW consumption of this month is 80 - 90 Btu/day/ft^2 higher, HHW is about 30 Btu/day/ft^2 higher, than the same month of last year. This building has a low level of energy balance load with the cross-point temperature around 60°F. The low E_{BL} level suggests imbalance of metered energy use in the building, but we are not able to determine the cause.

Explanatory Figure: 13 months energy balance plot with original data (The plot is rescaled to remove spikes)



Rudder Residence Hall (TAMU Bldg #291)

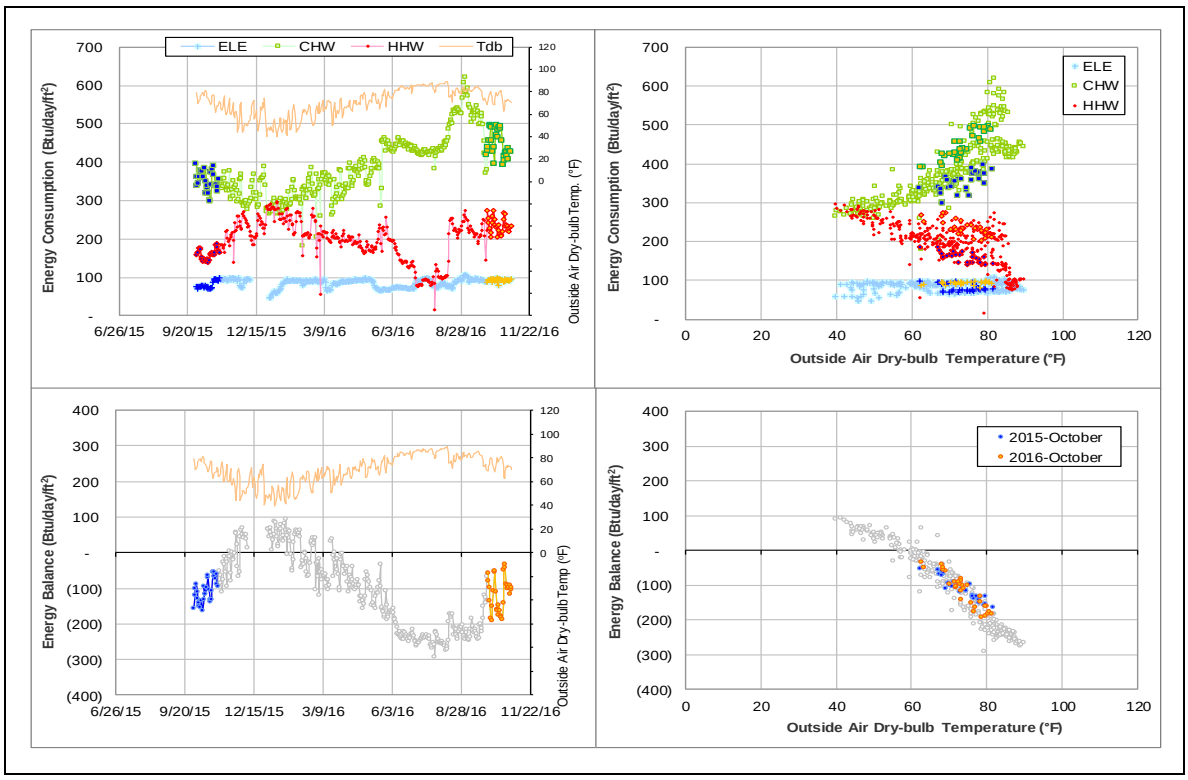
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
Energy Balance	The energy balance level is low. The cross-point temperature is around 60°F.	For several years

Comments

This building has a low level of energy balance load with the cross-point temperature around 60°F for years. The low E_{BL} level suggests imbalance of metered energy use in the building, but we are not able to determine the cause. See also section II-2.

Explanatory Figure: 13 months energy balance plot with original data



Appelt Residence Hall (TAMU Bldg #293)

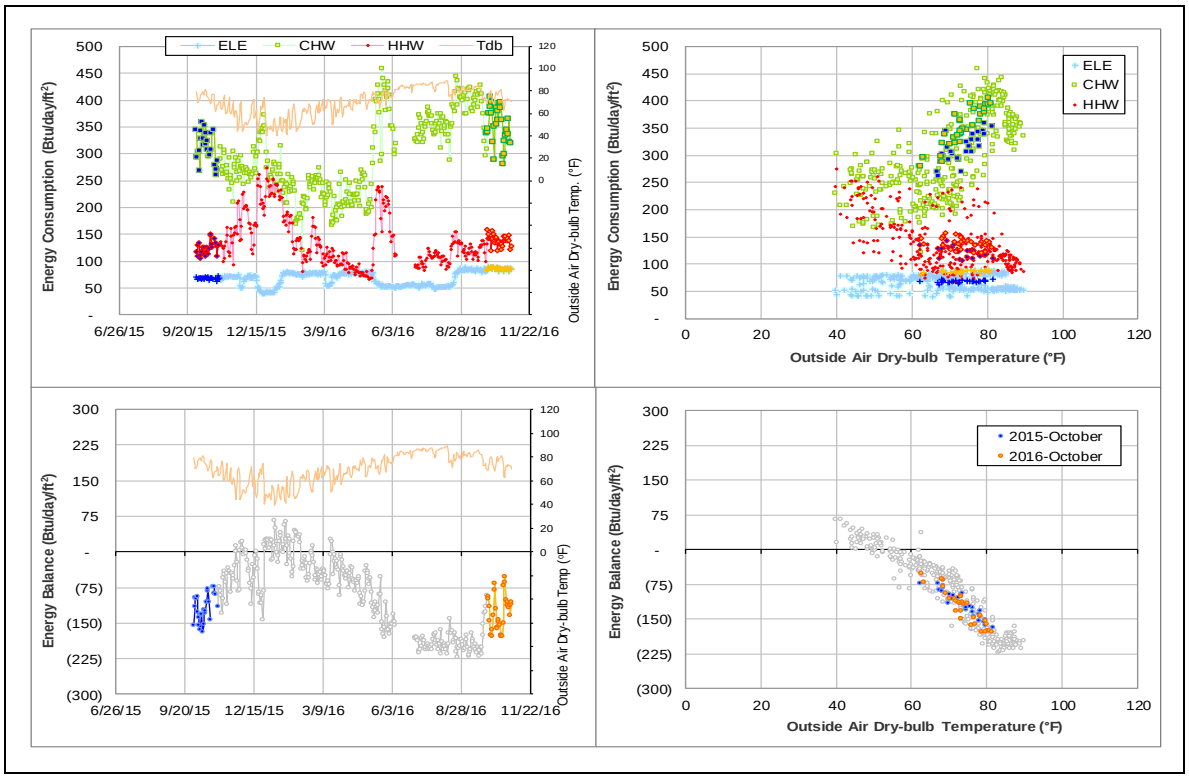
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The consumption level suddenly decreased.	Since December 2014
HHW	The consumption gradually decreased.	Since January 2015
Energy Balance	The energy balance decreased and the cross-point temperature is around 55°F.	Since January 2015

Comments

Both the CHW and HHW consumption levels have decreased, respectively. As a result, the energy balance load was low with the cross-point temperature around 55°F. The low E_{BL} level suggests imbalance of metered energy use in the building, but we are not able to determine the cause.

Explanatory Figure: 13 months energy balance plot with original data



Bright Building (TAMU Bldg #353)

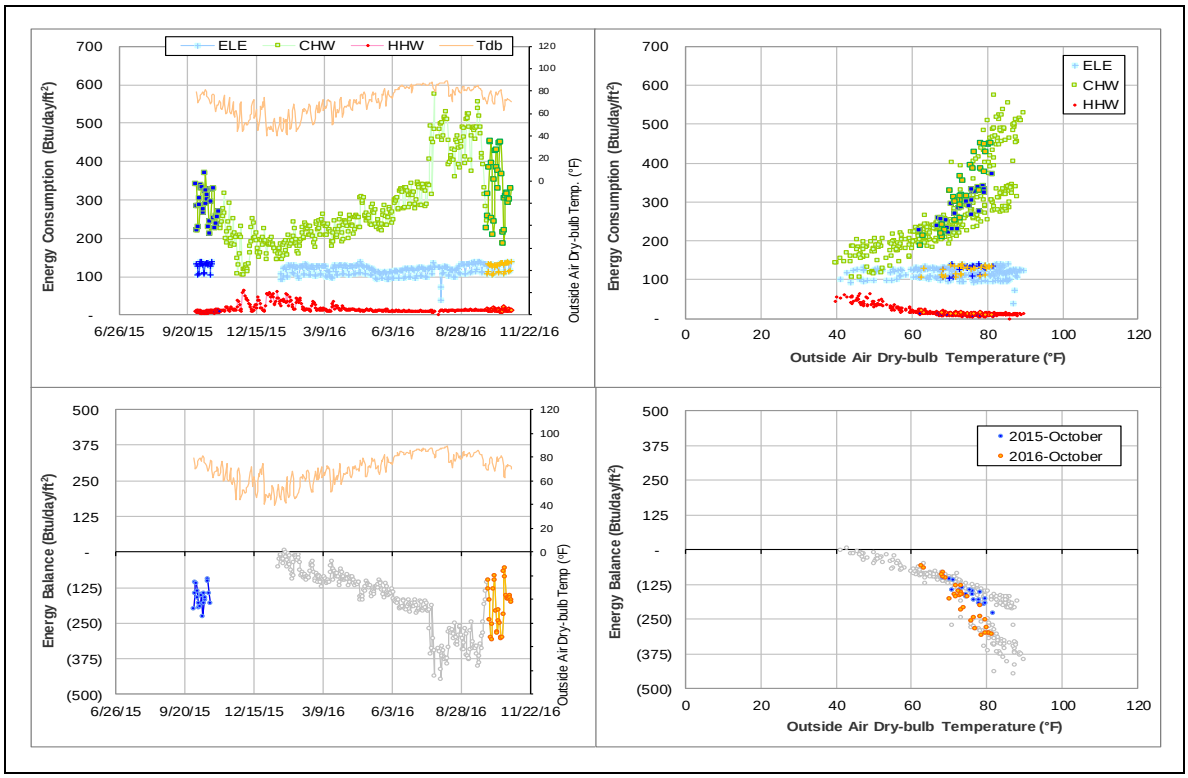
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
Energy Balance	The energy balance level has been low for years. The cross-point temperature was in the range of 40 - 70 °F.	For several years
CHW	The consumption level suddenly decreased.	Since July 2016

Comments

The energy balance load (E_{BL}) of this building has varied but always been low (the cross-point temperature was between 40°F and 70°F) for years. In the past 12 months, the cross-point temperature was around 50°F. CHW consumption increased greatly on 7/21/2016 and the cross-point temperature of energy balance looks to be shifting to a more reasonable range. More data are needed to verify the trend.

Explanatory Figure: 13 months energy balance plot with original data



Koldus Building (TAMU BLDG # 383)

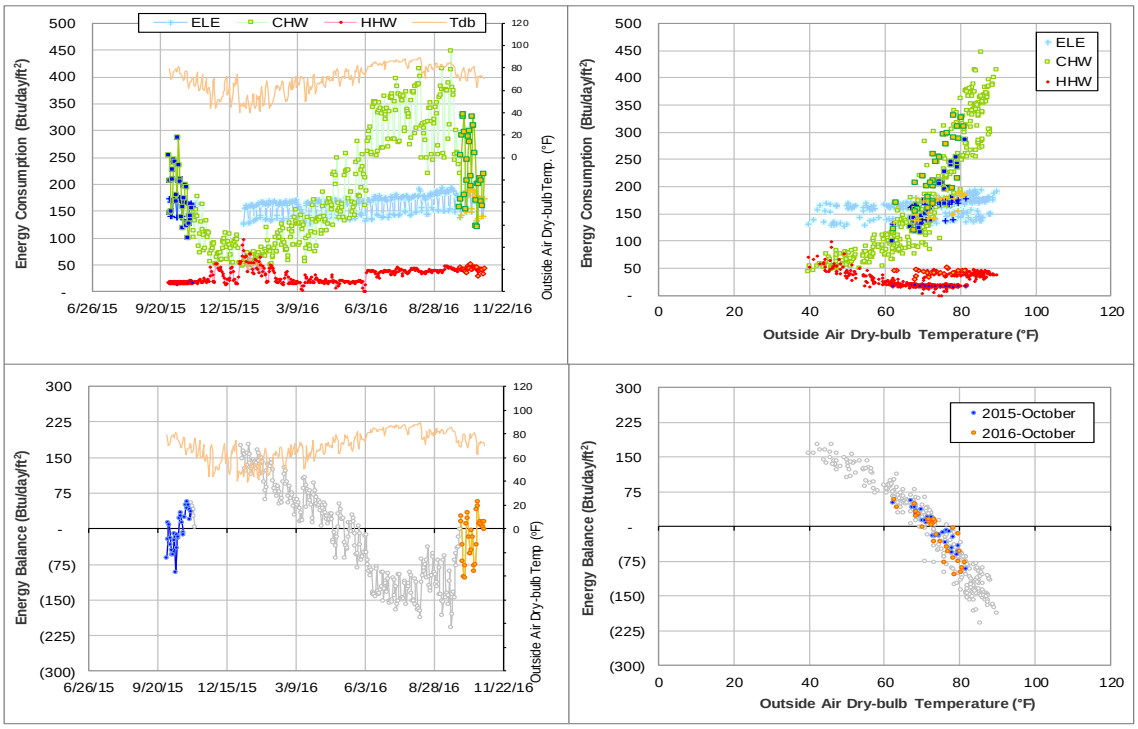
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW/HHW	The consumption suddenly increased.	Since early of June 2016

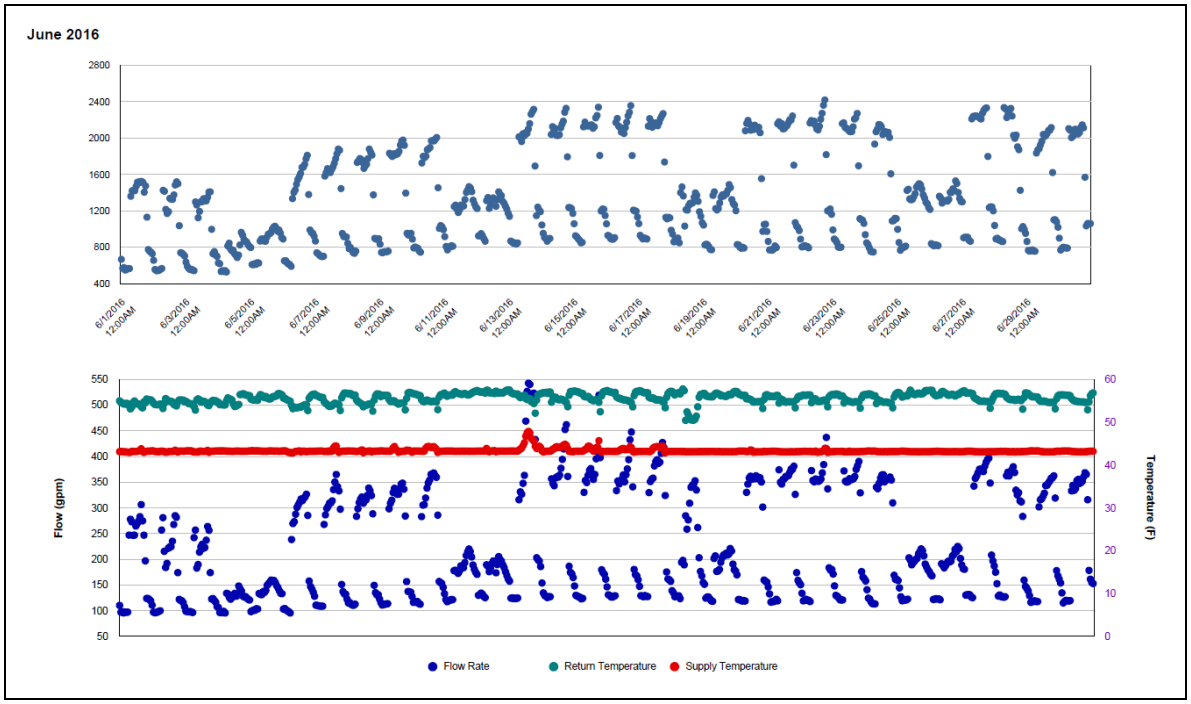
Comments

There CHW and HHW consumption both increased since early June 2016. CHW consumption was about 50 Btu/day/ft^2 higher the same period of last year, as the return temperature and the flow rate both increased slightly since 6/5/2016. Around the same time, HHW consumption was about 20 Btu/day/ft^2 higher compared to the past year, due to the increase of flow rate and the decrease of return temperature. However, the energy balance still holds its pattern. The new patterns seem to have stabilized but more data are needed for verification.

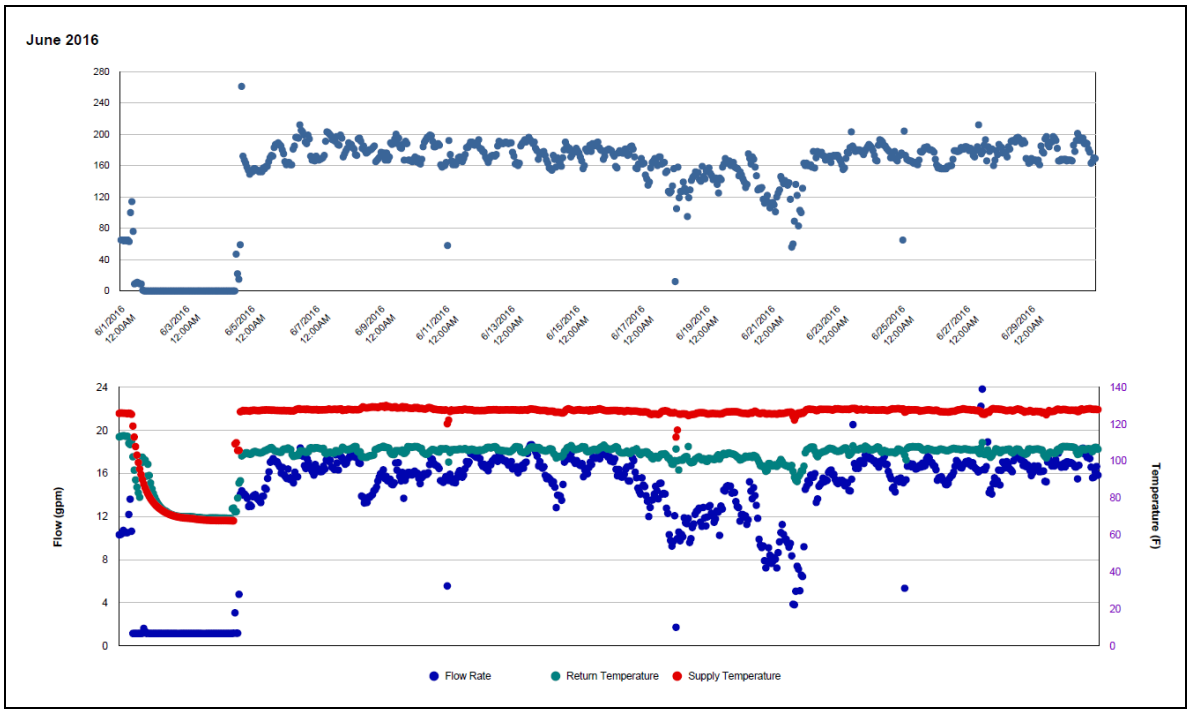
Explanatory Figure: 13 months energy balance plot with original data



Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (CHW during June 2016)



Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during June 2016)



Richardson Petroleum Engineering Building (TAMU Bldg #387)

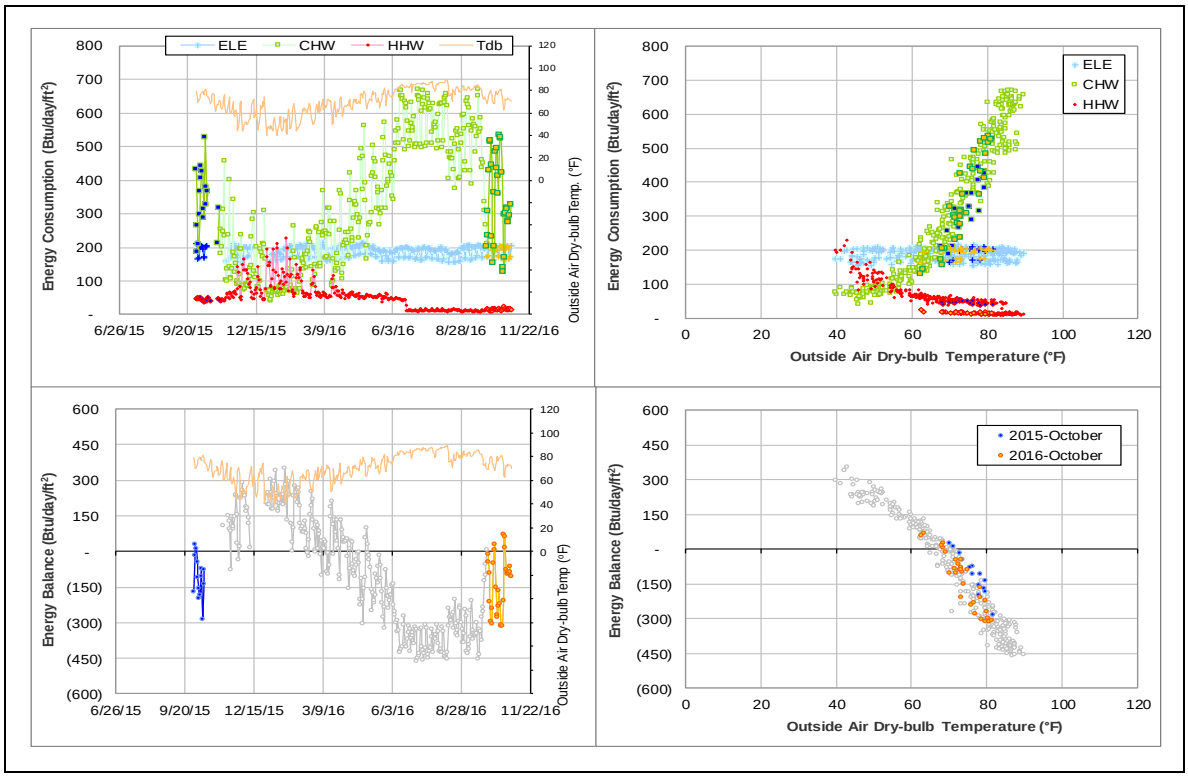
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	Decreased	6/21/2016 - ongoing

Quantitative descriptions and comments

The HHW consumption suddenly decreased by 30 Btu/day/ft^2 since 6/21/2016, as the HHW return temperature increased and the delta T decreased to be very small. Since the difference is fairly small and a new pattern seems to be forming, the consumption is not estimated.

Explanatory Figure: 13 months energy balance plot with original data



Legett Residence Hall (TAMU BLDG # 419)

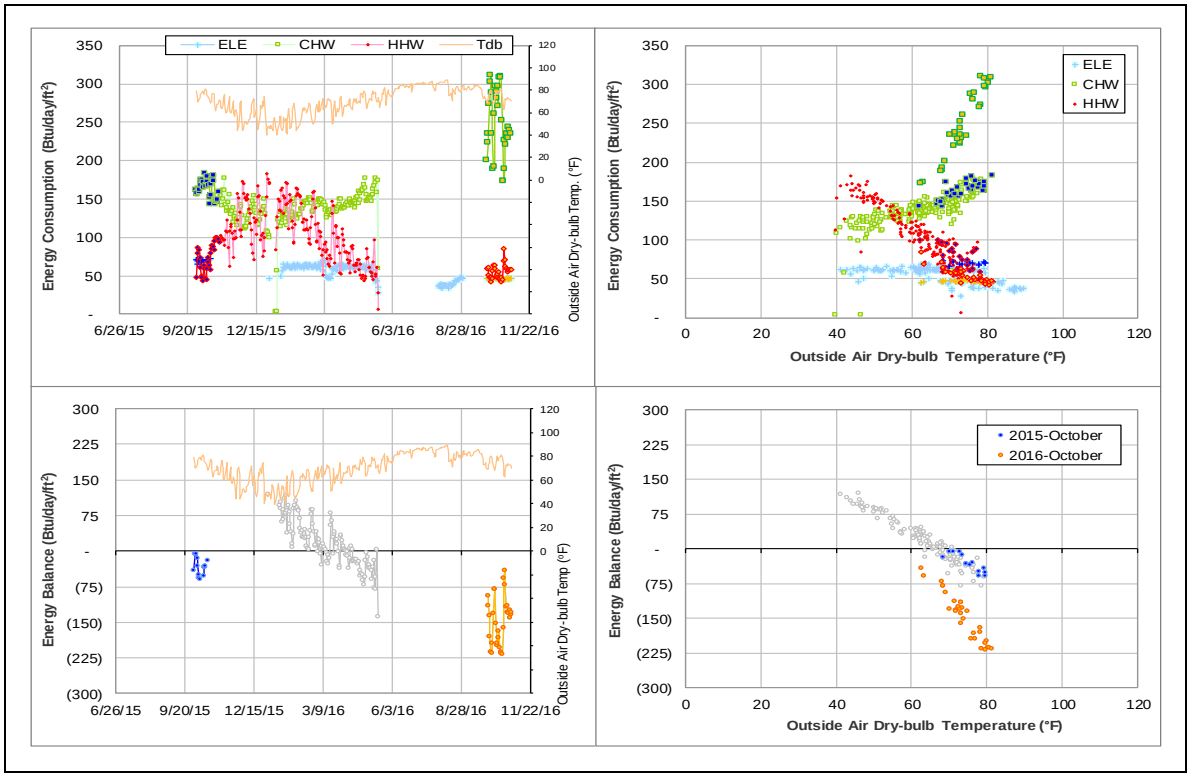
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
ELE	A slight decrease by 15 – 20 Btu/day-ft^2 is seen after the renovation.	Since 09/2016
CHW	A drastic increase is seen after the renovation, but the new slop implies a much lower consumption at the lower temperature side.	Since 09/2016
HHW	A slight decrease by 30 Btu/day-ft^2 is seen after the renovation.	Since 09/2016
EB	The new cross point is expected at 60 °F, which used to be 68 F.	Since 09/2016

Comments

The renovation of this building was finished in 9/2016 and a decrease was expected. ELE is slightly lower. CHW is currently much higher than before, but based on currently observed trend, much lower consumption can be expected at lower temperature side. HHW is slightly lower at present but more data are needed to see the new level. EB now is expected to cross at 60 °F, lower than previously 68 °F.

Explanatory Figure: 13 months energy balance plot with original data



Mosher Residence Hall (TAMU BLDG # 433)

Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
ELE	The consumption level suddenly decreased.	Since 1/23/2016
ELE	The consumption gradually decreased.	Since middle of May 2016
HHW	The consumption gradually increased.	Since middle of May 2016
Energy Balance	The cross-point temperature was around 50°F, but can be expected to be higher.	Since March 2015

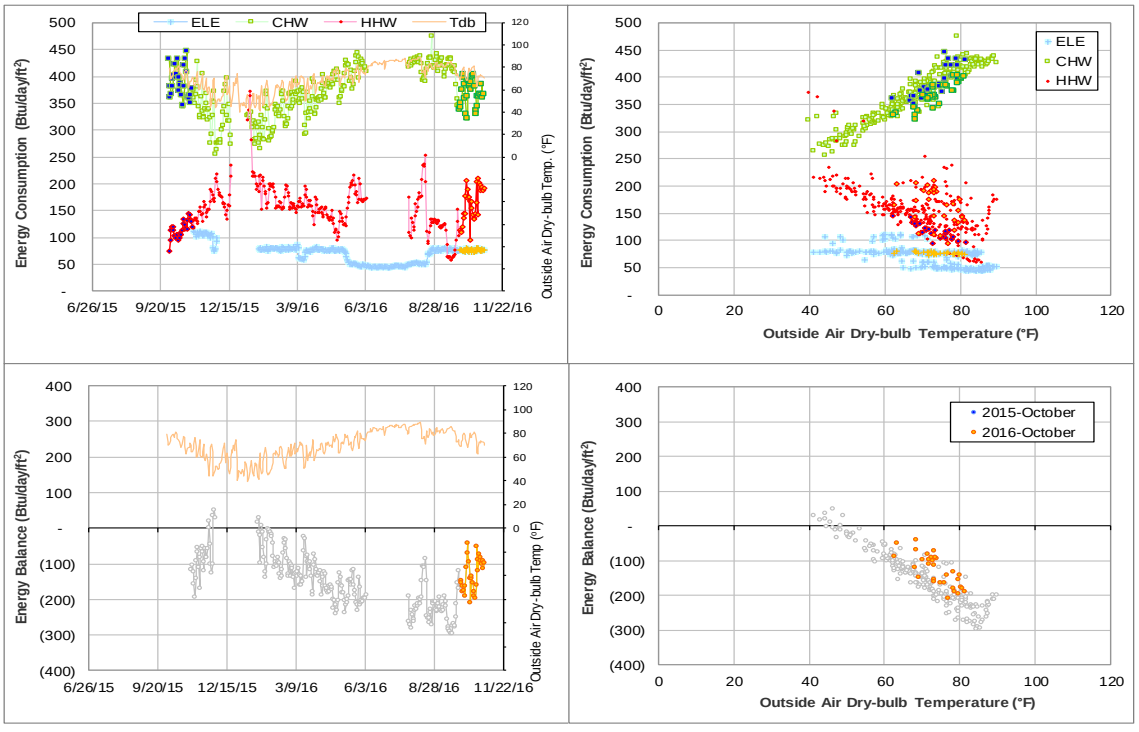
Comments

The cross-point temperature for this building was around 55°F before March 2015. CHW consumption increased 50- 100 Btu/day/ft^2 due to an increase of flow rate after March 2015 and the pattern was stable over one year. As a result, the cross-point temperature decreased from 55°F to 50°F.

The ELE meter (MID 009083) replaced old meter (MID 000290) since January 2016. After that, the consumption decreased from 105 Btu/day/ft^2 to 80 Btu/day/ft^2 (approximately 25%). The CHW and HHW consumption levels didn't change. The cross-point temperature decreased further and it is lower than 50°F now. It is suggested to investigate this meter.

In the middle of May 2016, the ELE further decreased to 50 Btu/day/ft^2 and the HHW consumption increased by 50 Btu/day/ft^2. This HHW increase may have some impact to pull the EB up and the new cross point is expected to be higher.

Explanatory Figure: 13 months energy balance plot with original data



Commons Hall (TAMU BLDG # 440)

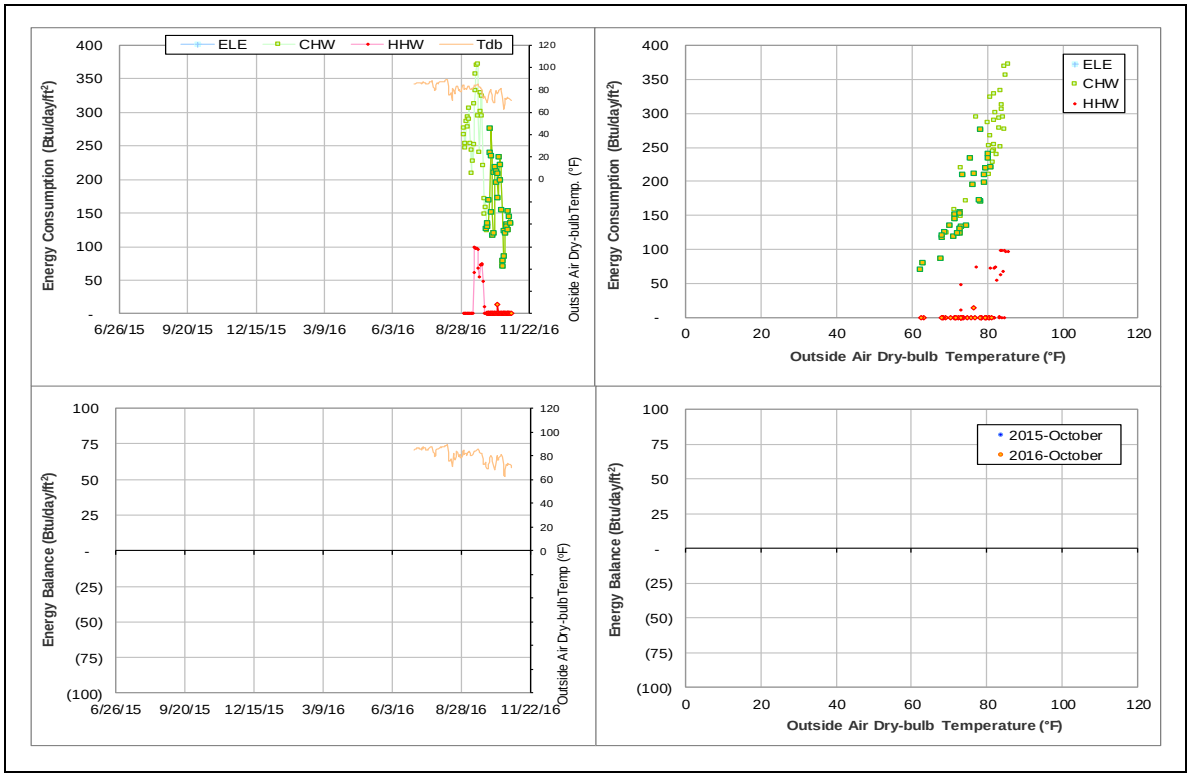
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW/HHW	New MID	Timestamp starting 7/1/2016

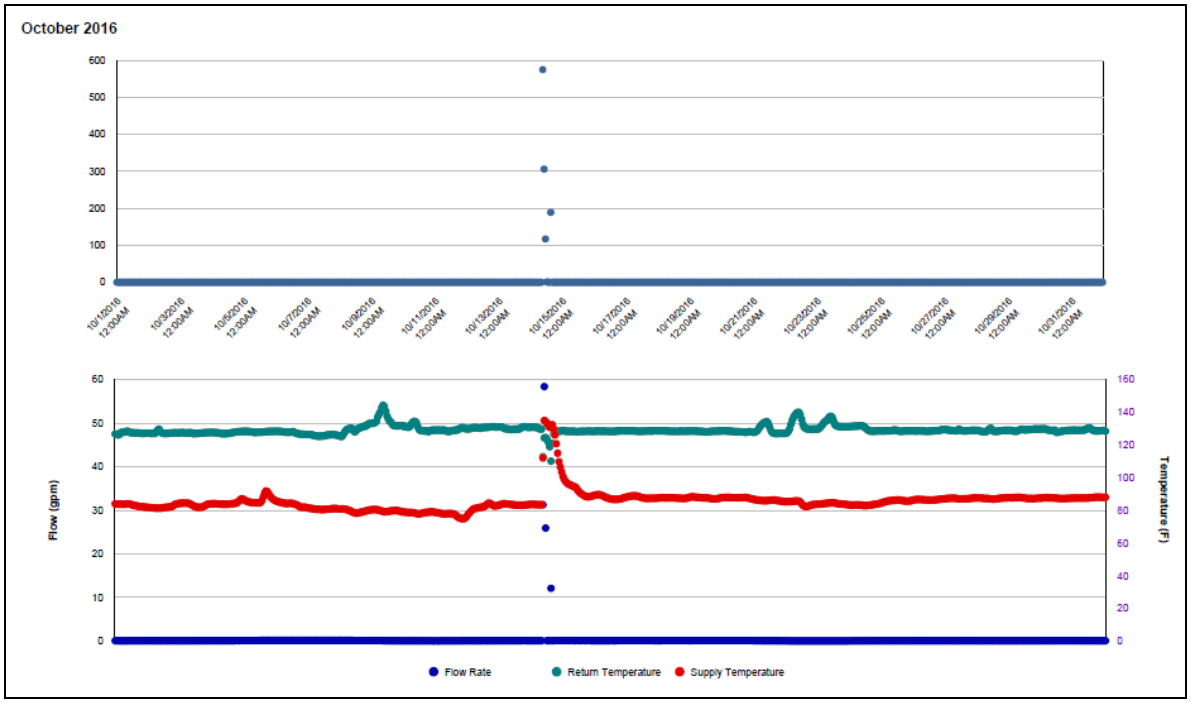
Comments

CHW 009237 and HHW 009238 are new MID's with timestamp starting 7/1/2016. Earliest data received started on 9/1/2016. HHW of this building does not seem to form a stable pattern and frequently has zero consumption days, but it is not yet estimated.

Explanatory Figure: 13 months energy balance plot with original data



Explanatory Figure: Time series plots of hourly energy consumption, flow rate, and supply and return temperatures from the utilities office. (HHW during October 2016)



Krueger Residence Hall (TAMU Bldg #441)

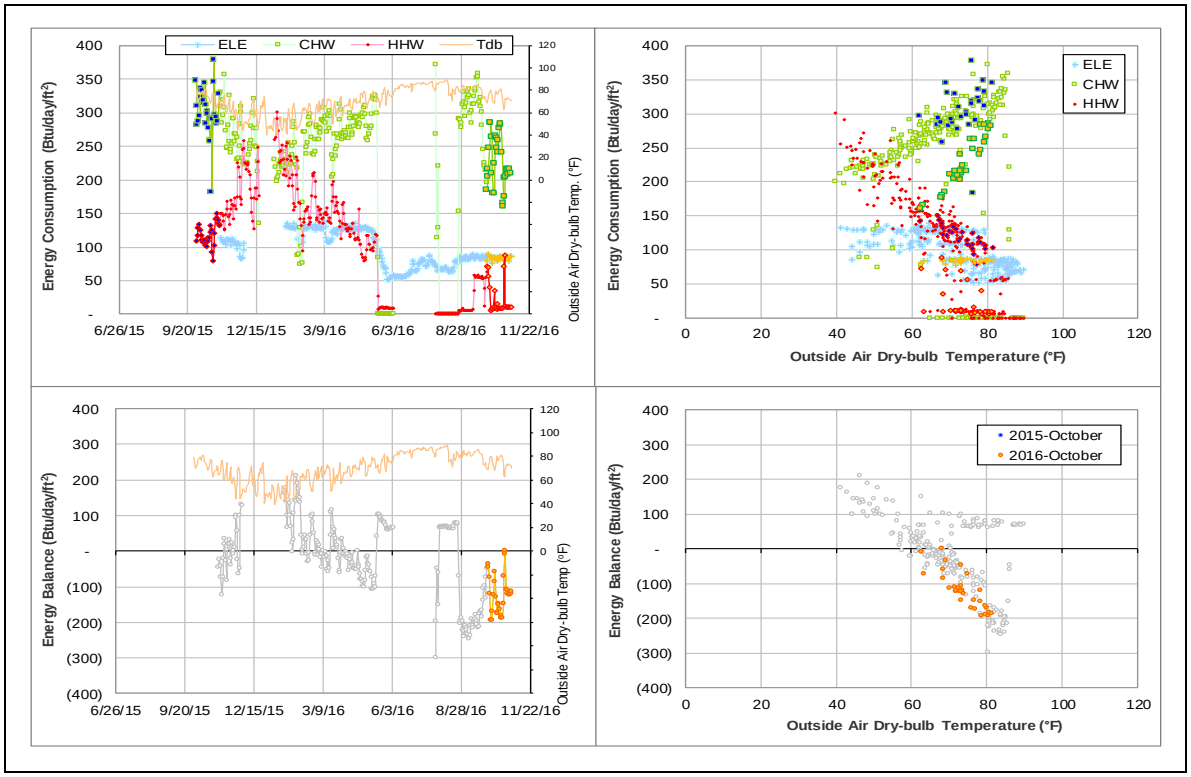
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW/HHW	The consumption significantly decreased after a missing and faulty period.	Since September 2016

Comments

The CHW and HHW consumption decreased significantly after a missing and faulty period. More data are needed to verify the new pattern. See also II-2.

Explanatory Figure: 13 months energy balance plot with original data.



Aston Residence Hall (TAMU Bldg #447)

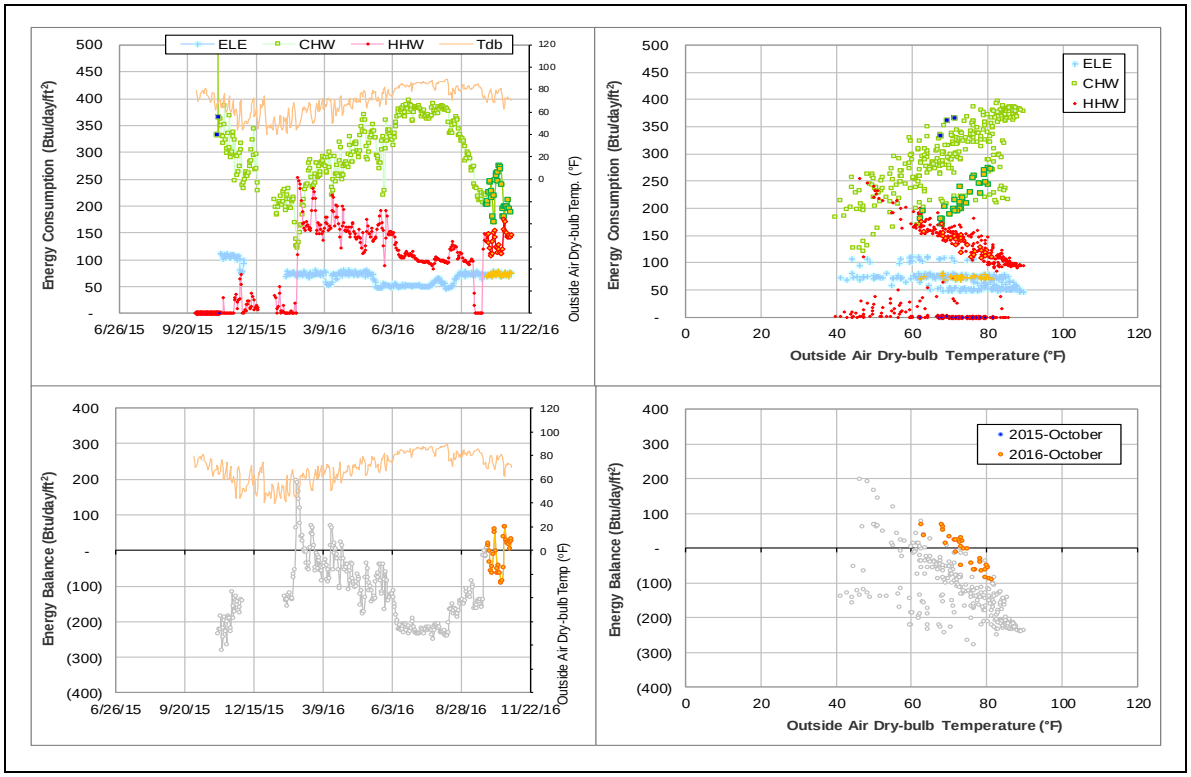
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The consumption significantly decreased.	Since September 2016
EB	New cross point from 60°F to 73°F.	Since October 2016

Comments

CHW consumption significantly decreased and seems to be forming a new pattern. EB is crossing at 73°F currently. More data are needed to verify the new pattern.

Explanatory Figure: 13 months energy balance plot with original data.



Oceanography & Meteorology Building (TAMU Bldg #443)

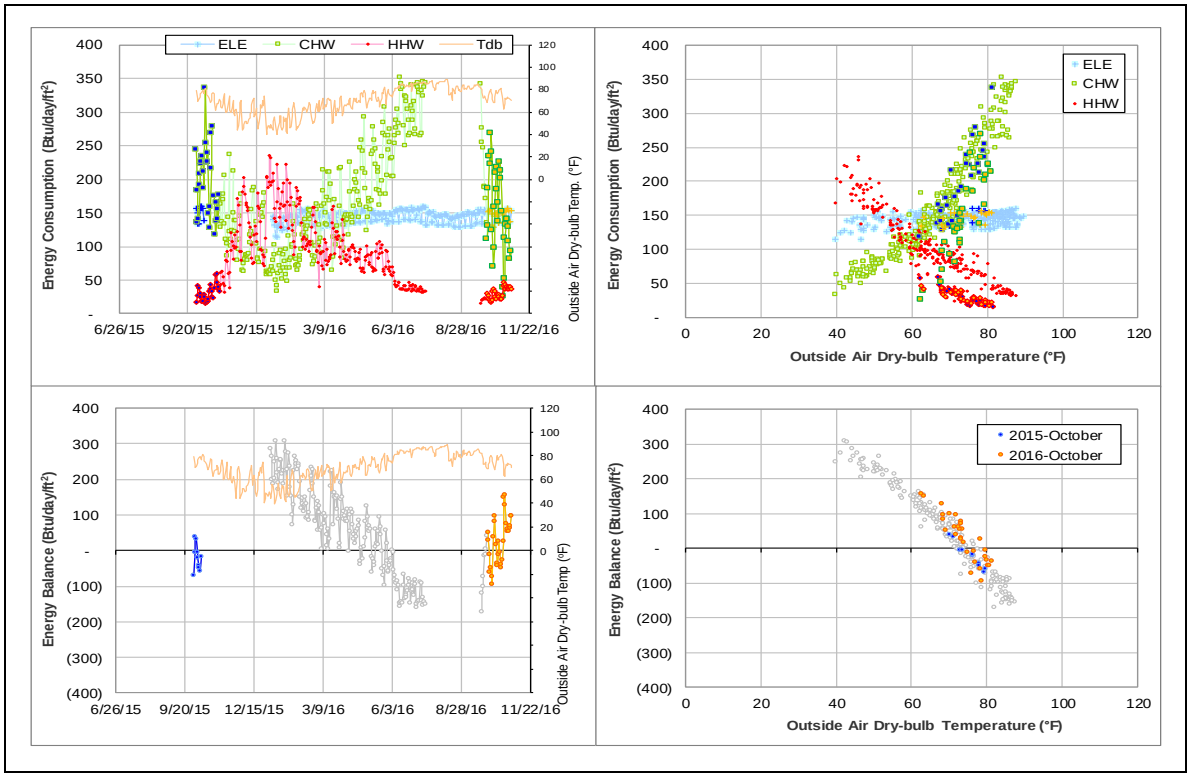
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	The consumption significantly decreased after a missing period.	Since September 2016
HHW	The consumption significantly decreased after a missing period, but is at the same level last year.	Since September 2016

Comments

Both CHW and HHW consumption decreased significantly after a missing period, but EB is not affected. CHW had very low Delta-T during 10/21 – 10/25/2016. See also section II-2.

Explanatory Figure: 13 months energy balance plot with original data.



Rudder Theatre Complex (TAMU BLDG # 446)

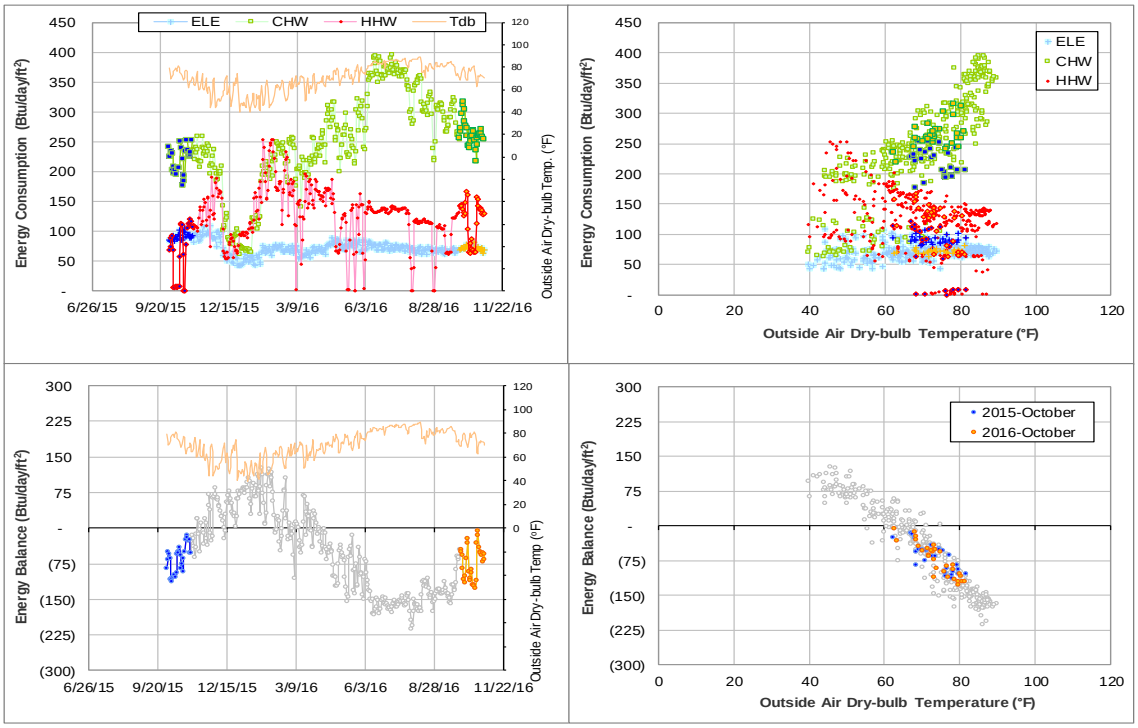
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW/HHW	The consumption has increased, and was higher than the same month of last year.	Since June 2016

Comments

The CHW and HHW consumption has increased and was about 120 But/day/ft^2 higher than the same month of last year. However, the energy balance pattern didn't change.

Explanatory Figure: 13 months energy balance plot with original data



Biological Sciences Building – East (TAMU BLDG # 467)

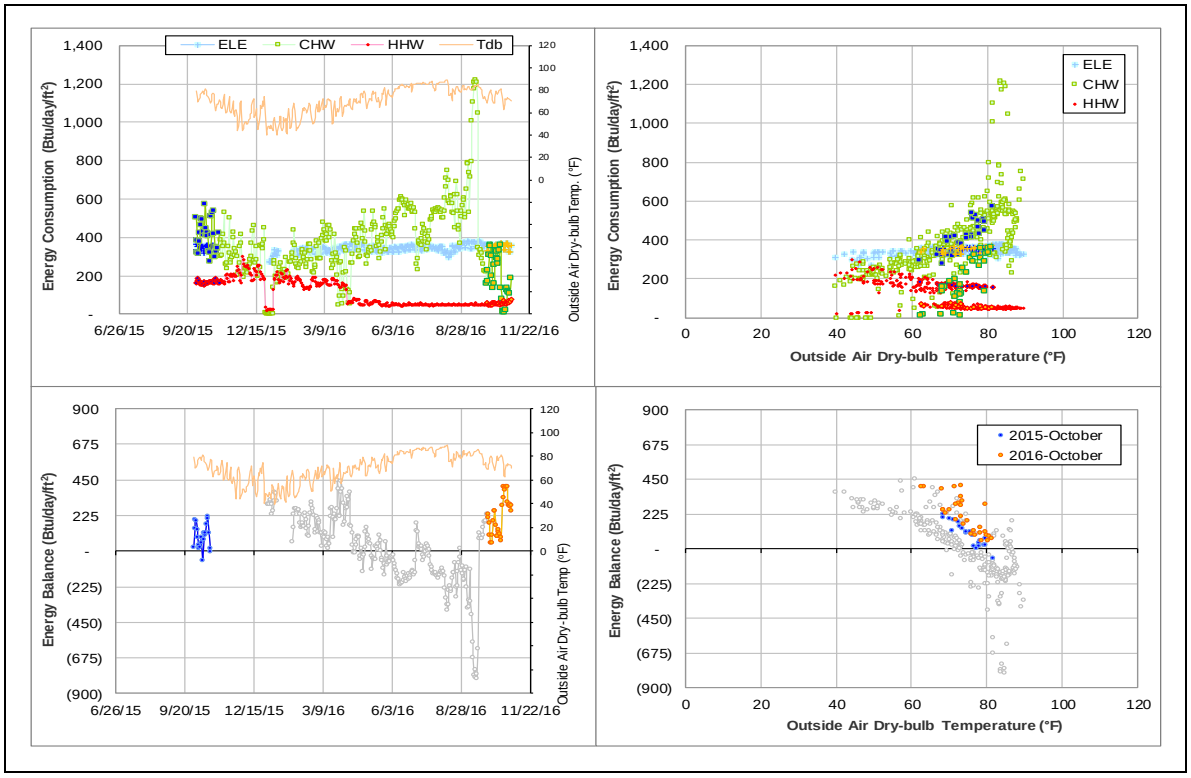
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	Decreased after a meter faulty period.	Starting 7/2016
HHW	Decreased.	Starting 4/2016

Comments

A recent decrease occurred to both CHW and HHW. CHW appears to have been lower than the main pattern starting 7/2016, but the meter readings have been faulty starting 8/6/2016 and the CHW supply temp reading is still 3°F higher than adjacent buildings. These data are questionable. HHW consumption dropped from 140 Btu/day-sf level to 60 Btu/day-sf level in 4/2016 due to a sharp increase of return temp. See also section II-2.

Explanatory Figure: 13 months energy balance plot with original data



Scoates Hall (TAMU Bldg #478)

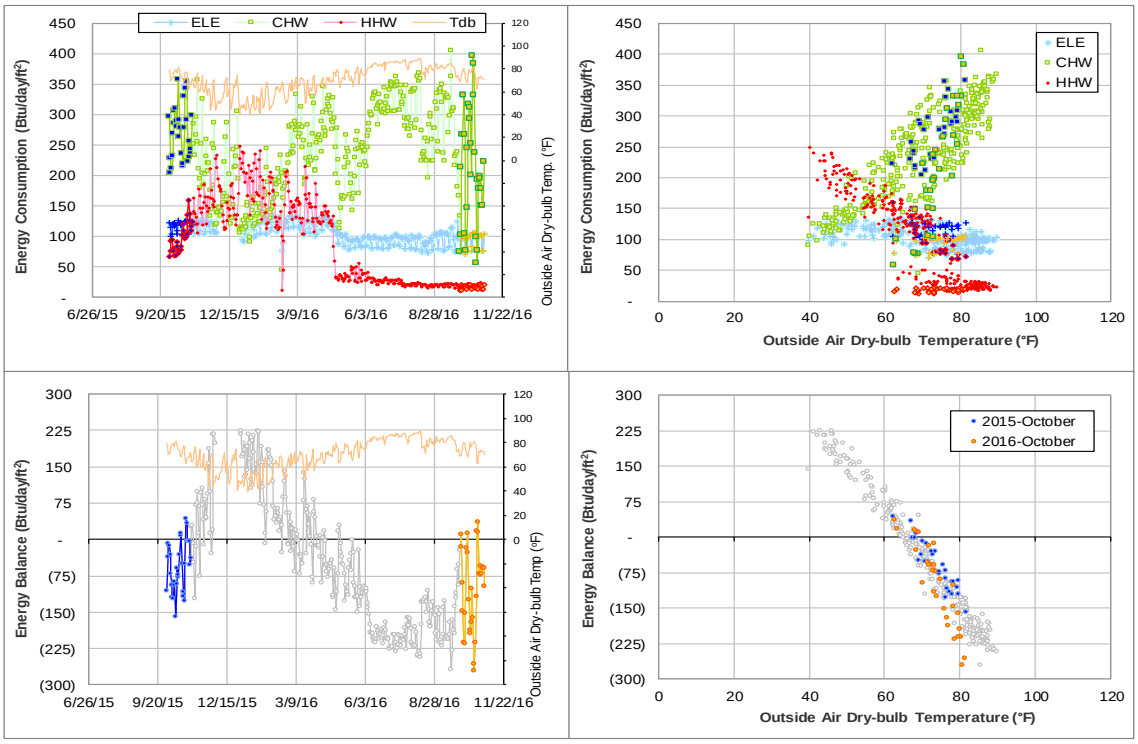
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
ELE, CHW, and HHW	The consumption level has significantly decreased.	4/26/2016 – Ongoing

Quantitative descriptions and comments

ELE, CHW, and HHW all saw a significant decrease in consumption starting 4/26/2016 and kept decreasing in steps. There has been a decrease in CHW flow rate starting around 9/21/2016 that may be causing the energy balance pattern to shift. More data is needed to see if the pattern continues.

Explanatory Figure: 13 months energy balance plot with original data.



Fermier Hall (TAMU Bldg #482)

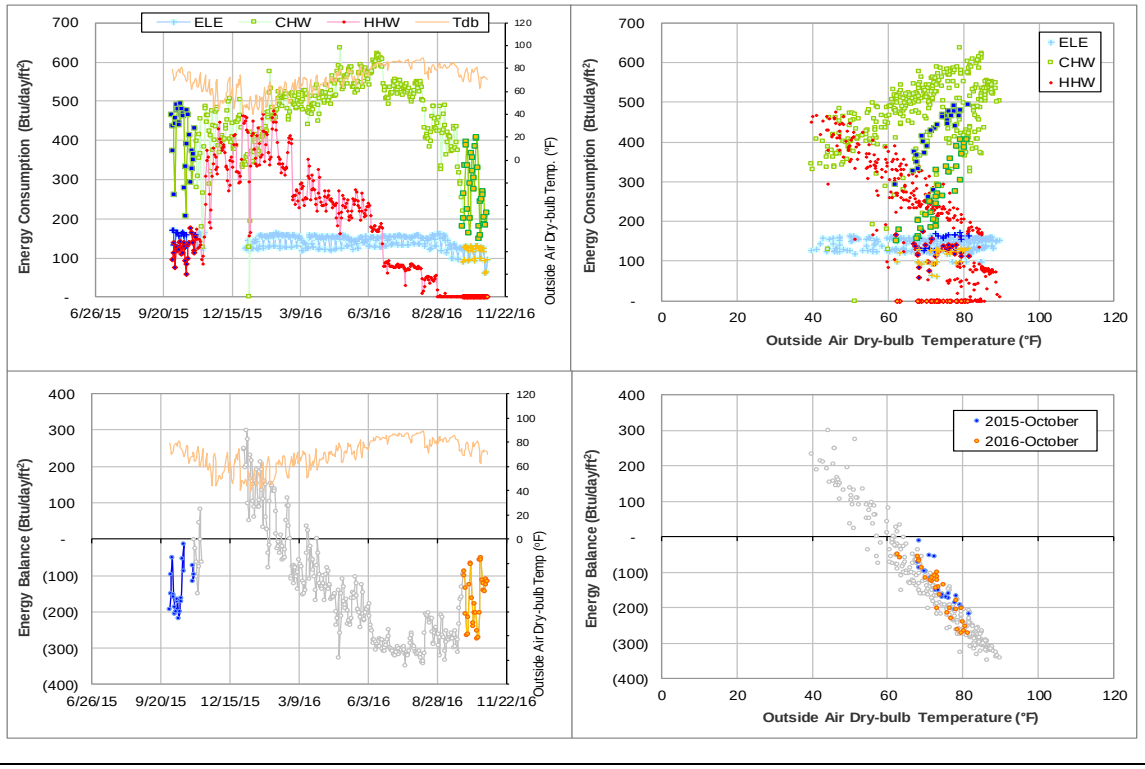
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW/HHW	The consumption level has significantly decreased.	6/24/2016 – Ongoing

Quantitative descriptions and comments

CHW and HHW of this building decreased significantly in steps since 6/24/2016. Since the energy balance plot has retained its pattern, the drop may be due to a decrease in usage.

Explanatory Figure: 13 months energy balance plot with original data.



Civil Engineering Building (TAMU Bldg #492)

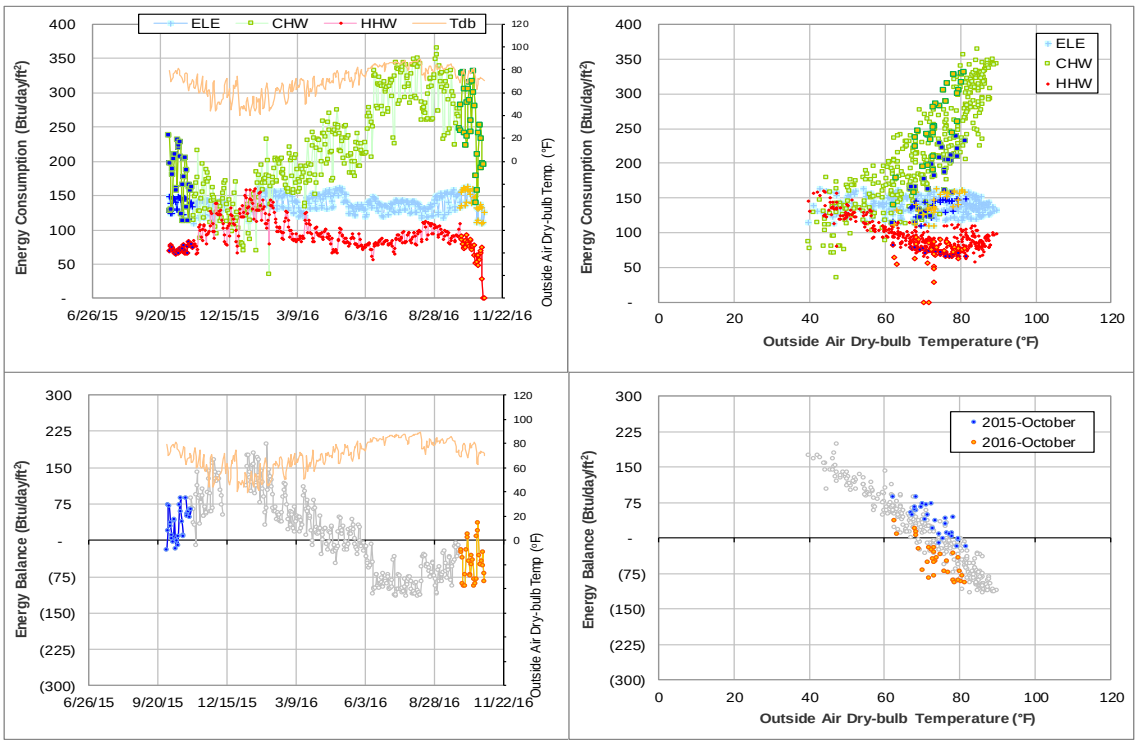
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	Increased	6/14/2016 – 10/20/2016
HHW	Increased	8/1/2016 – 10/20/2016

Quantitative descriptions and comments

The CHW and HHW consumption level is higher than the same month of last year since June and August, respectively. CHW flow had rapid increase starting 6/14/2016 and again on 7/11/2016, but Delta-T adjusted and the consumption did not increase rapidly. The CHW and HHW flow decreased 10/20/2016 and 10/30/2016. As a result, the consumption decreased back to previous levels. It doesn't seem to be a metering issue because the energy balance kept the same pattern.

Explanatory Figure: 13 months energy balance plot with original data.



Utilities & Energy Services Central Office (TAMU Bldg #496)

Detected issues in the energy balance and/or the consumption data

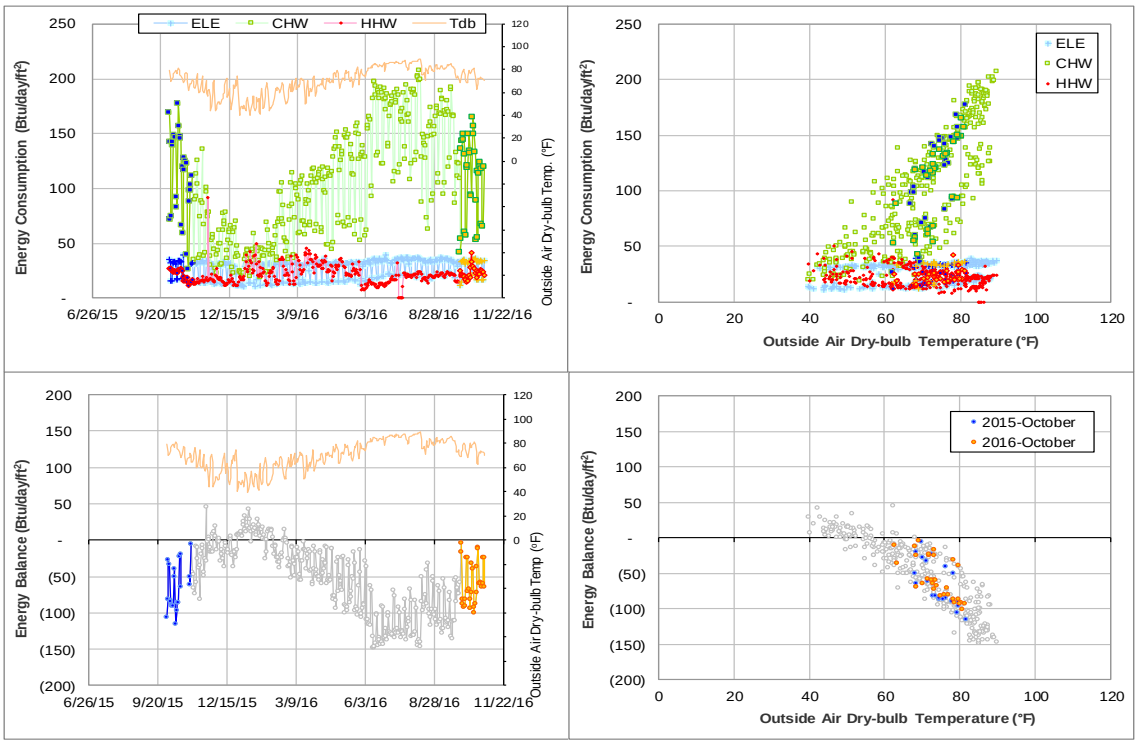
Data Type	Description of data behaviors	Period
ELE, CHW, and HHW	The energy use per unit floor area was low compared to other buildings.	Since the data became available on 7/1/2012

Quantitative descriptions and comments

The peak electricity use density was around 0.65 W/ft^2 which is small compared to that of other office buildings on campus. The delta T for HHW seemed to be small for years. The CHW and HHW consumption per the unit floor area also seemed to be low. It is possible that the GSF we have (46,110 ft^2) includes substantial unoccupied space.

The energy balance was scattered due to the consumption level changes for CHW and HHW, the cross-point temperature of the energy balance was ranged around 50°F to 70°F.

Explanatory Figure: 13 months energy balance plot with original data.



Engineering Innovation Center (TAMU Bldg # 499)

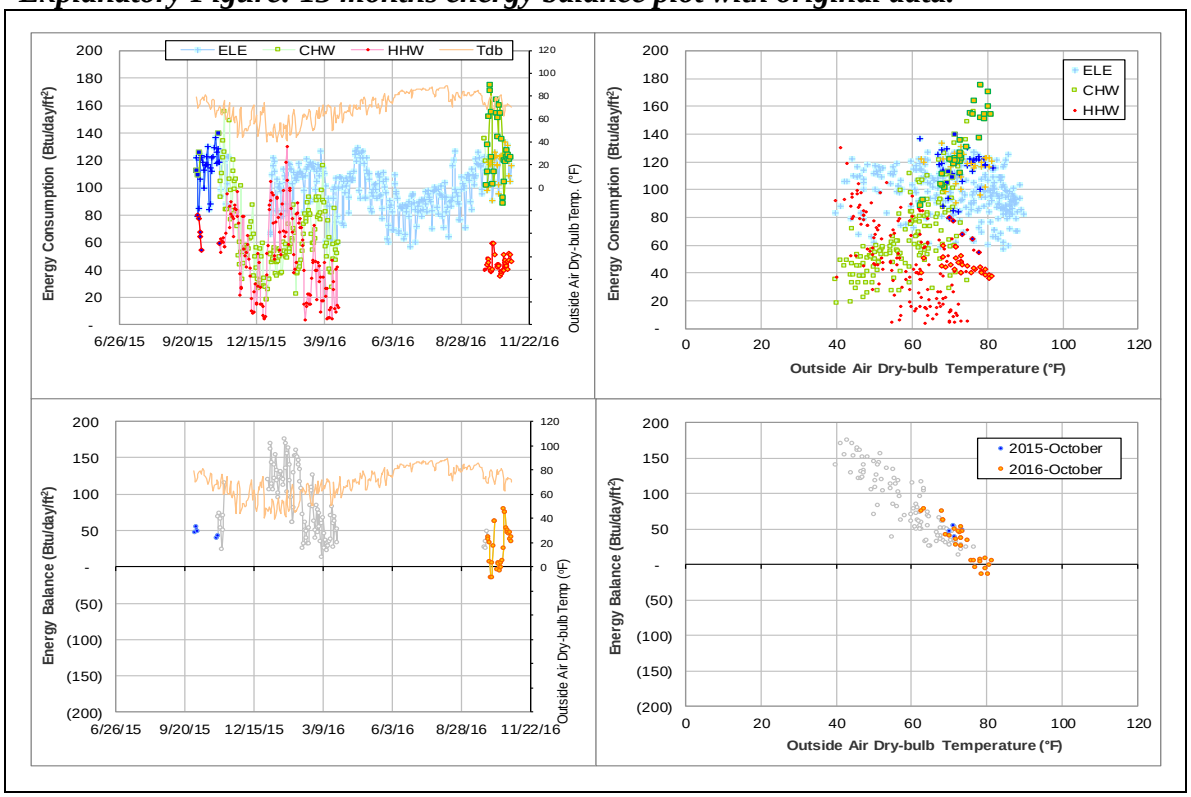
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
Energy Balance	The cross-point temperature is high.	For years
CHW	The consumption level is low compared to the ELE and HHW consumption.	For years

Comments

The CHW consumption is relatively low compared to the ELE and HHW consumption and it could be the reason causing high cross-point temperature of energy balance for this building.

Explanatory Figure: 13 months energy balance plot with original data.



Nagle Hall (TAMU Bldg #506)

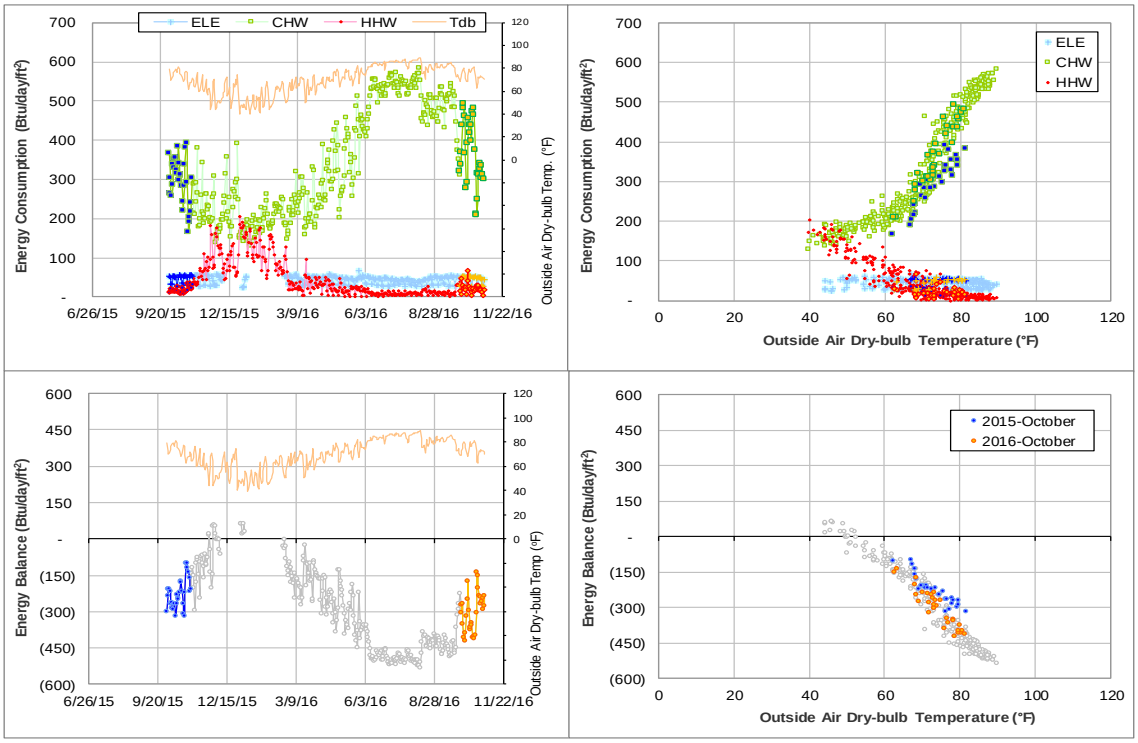
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
Energy Balance	The level was low and the cross-point temperature was around 50°F.	The cross-point temperature has always been low.
ELE	The consumption per unit floor area was smaller than those for other office buildings.	The level was always low and gradually decreased over the past 4 years.

Comments

The ELE consumption was about 100 Btu/day/ft^2 lower than the levels in typical office buildings on campus, and this might be a metering error or this meter might not cover the whole building.

Explanatory Figure: 13 months energy balance plot with original data



Veterinary Teaching Hospital and Med Administration (TAMU Bldg #508)

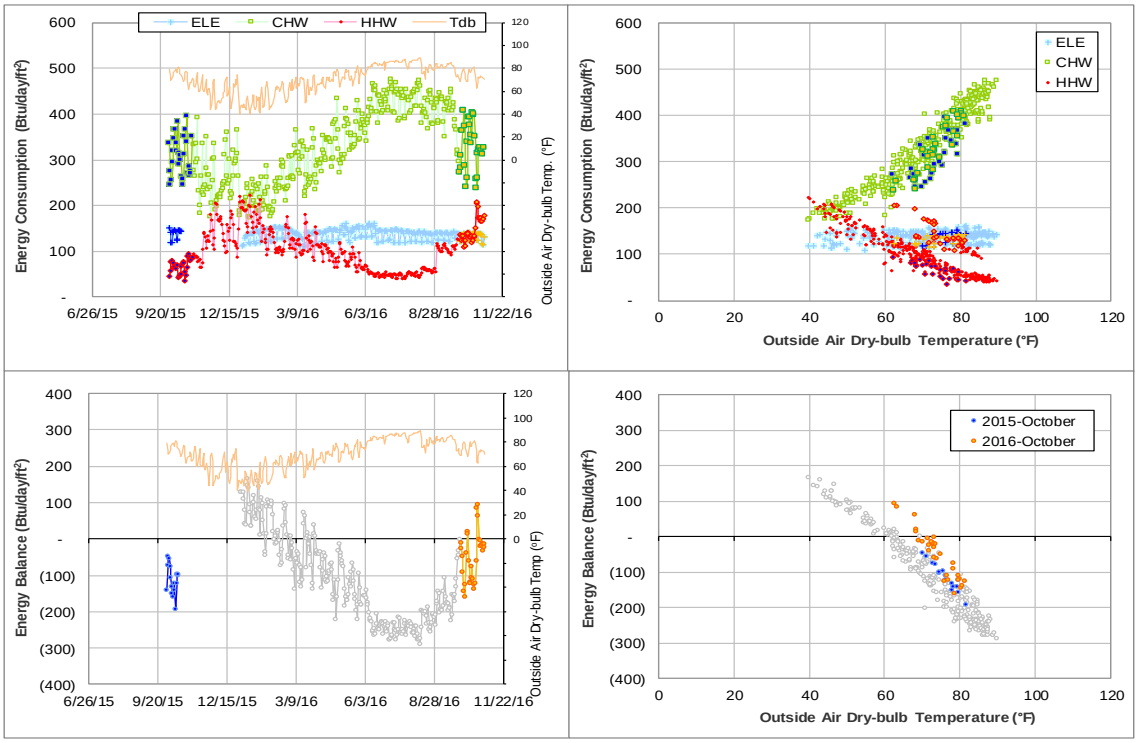
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The consumption level increased.	9/1/2016 - Ongoing

Quantitative descriptions and comments

The consumption level for HHW has increased starting 9/1/2016 and the energy balance cross point temperature has increased from ~60°F to ~70°F. More data is needed to see if the new pattern continues.

Explanatory Figure: 13 months energy balance plot with original data



Blocker Building (TAMU Bldg #524)

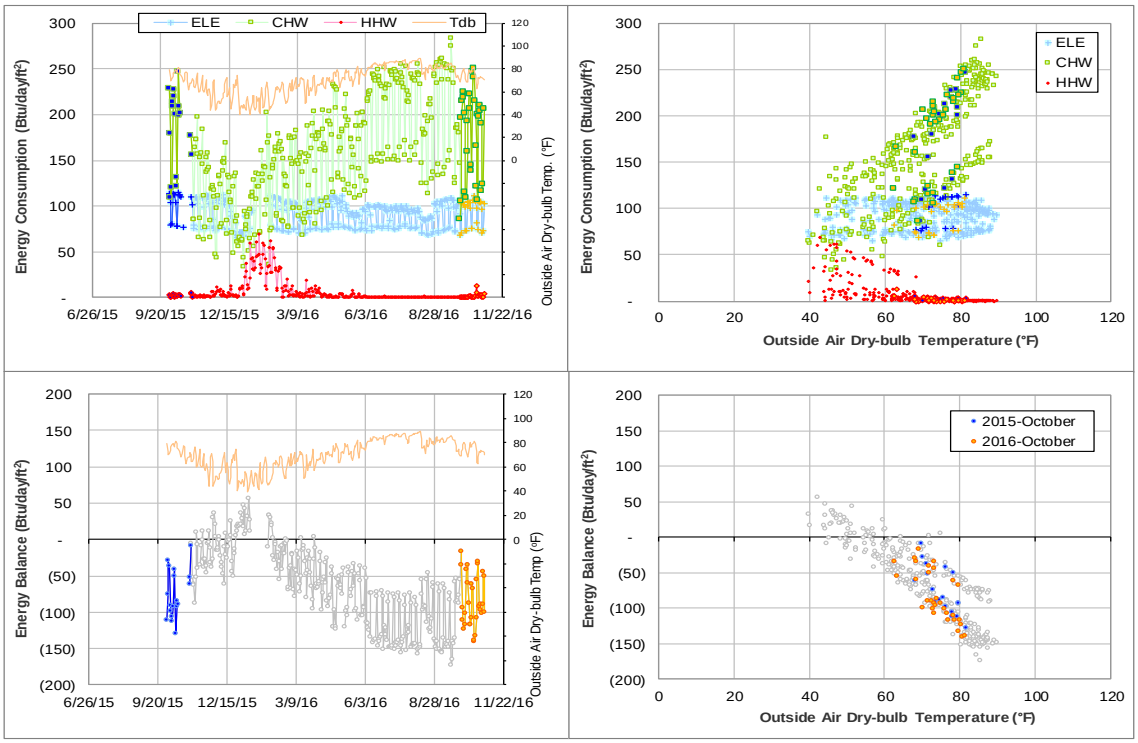
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	The consumption level might be low.	Past several years

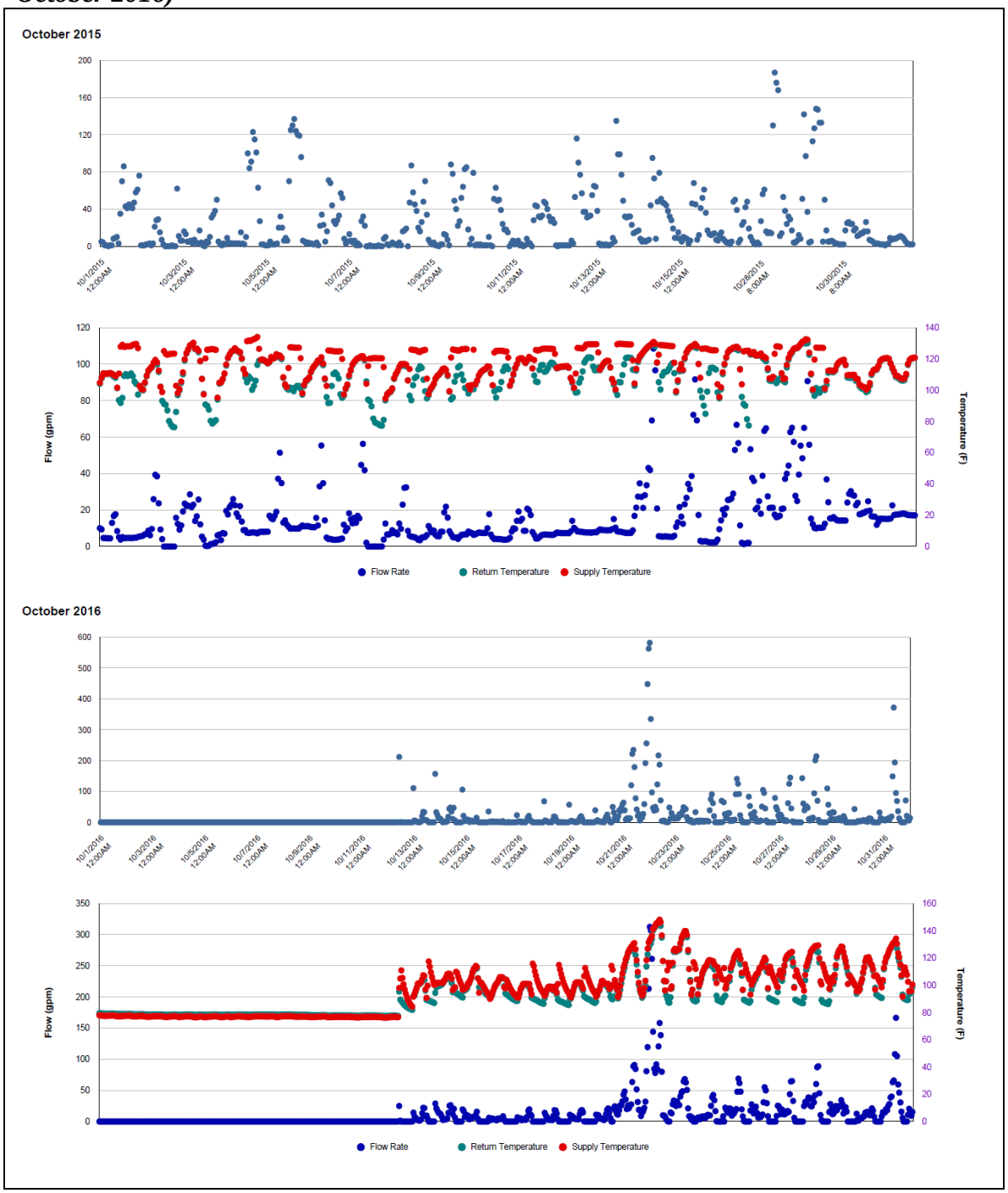
Quantitative descriptions and comments

The cross-point of temperature of energy balance has been low for years. The delta T and consumption level for HHW seems low for the past couple of years. It is suggested to investigate this meter.

Explanatory Figure: 13 months energy balance plot with original data



Explanatory Figure: Time series plots of hourly HHW energy consumption, flow rate, and supply and return temperatures from the utilities office. (top: October 2015, bottom: October 2016)



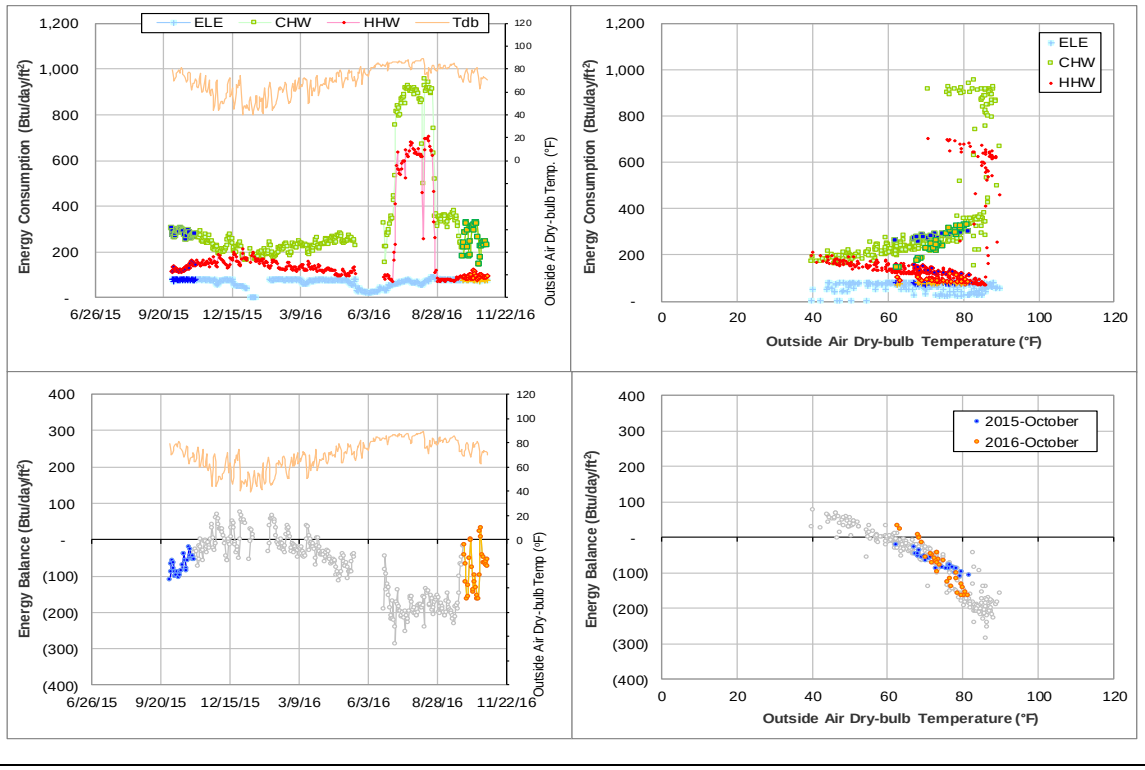
Neeley Residence Hall (TAMU Bldg #652)

Data Type	Description of data behaviors	Period
CHW/HHW	The consumption level decreased.	8/25/2016 – Ongoing

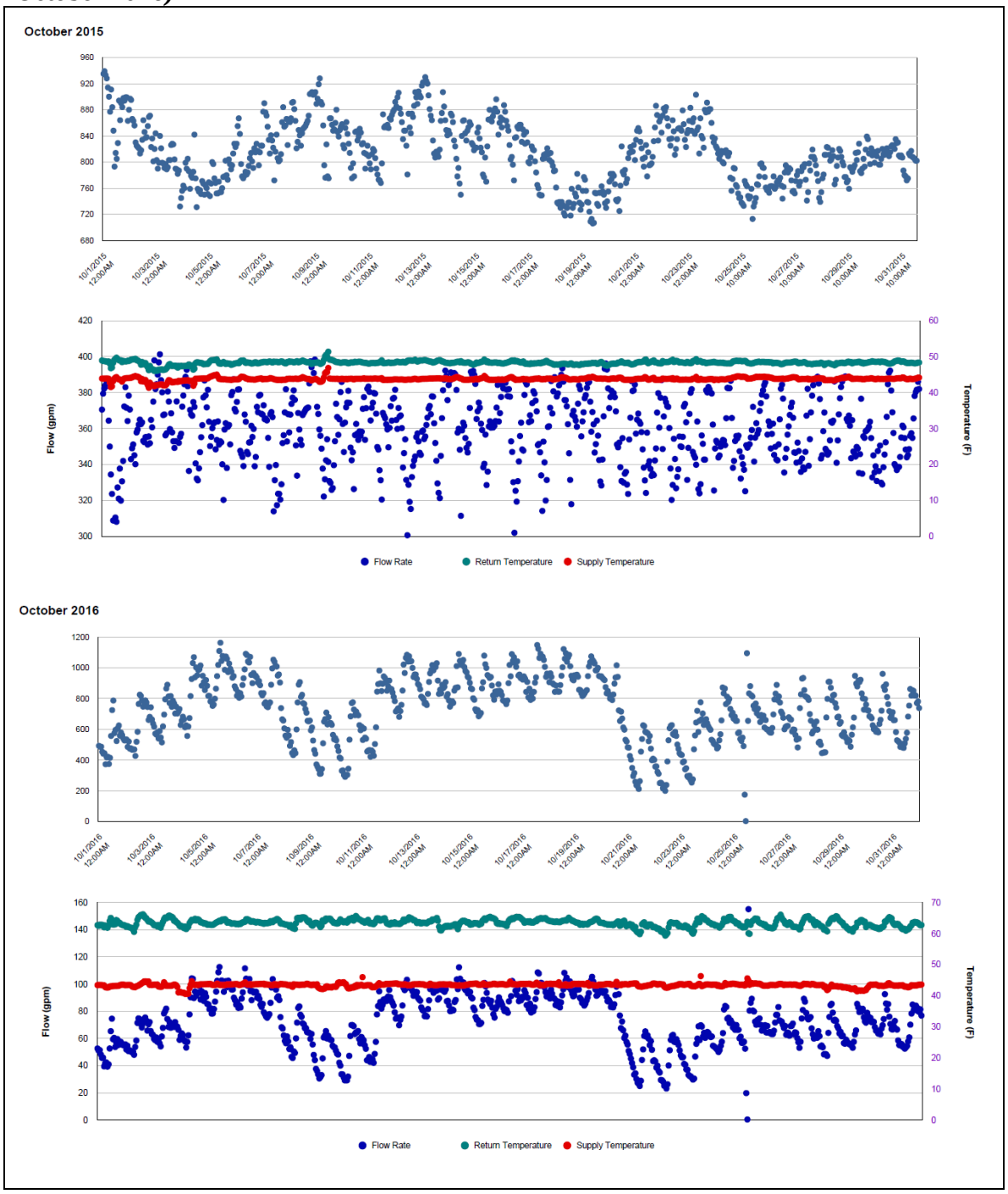
Comments

Since the HVAC system renovation in this summer the CHW and HHW consumption has decreased after 8/25/2016, especially in the low temperature range. The cross-point temperature of energy balance shifted to more reasonable range. (From ~60°F to ~68°F). More data is needed to verify the new pattern.

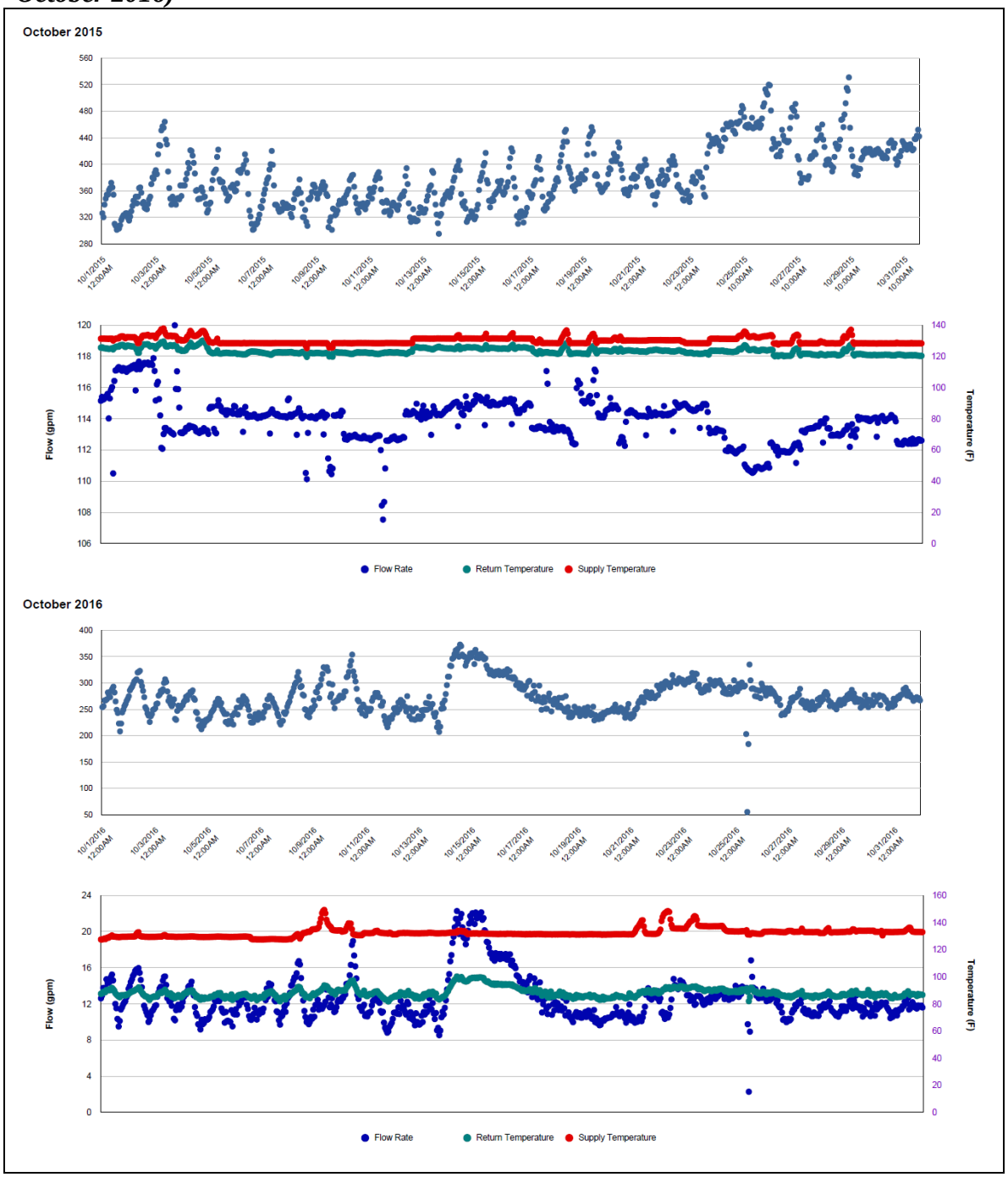
Explanatory Figure: 13 months energy balance plot with original data



Explanatory Figure: Time series plots of hourly CHW energy consumption, flow rate, and supply and return temperatures from the utilities office. (top: October 2015, bottom: October 2016)



Explanatory Figure: Time series plots of hourly HHW energy consumption, flow rate, and supply and return temperatures from the utilities office. (top: October 2015, bottom: October 2016)



Entomology Research Lab (TAMU Bldg #815)

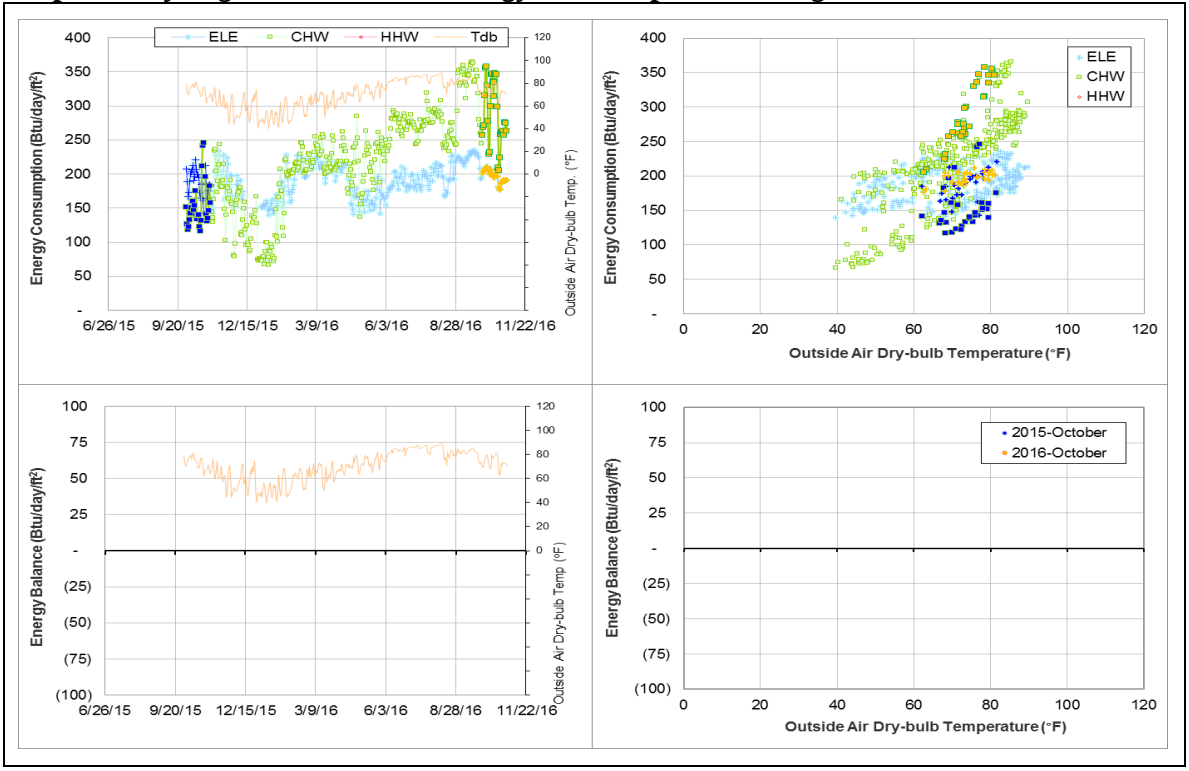
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	Change in energy consumption pattern	9/1/2016 – Ongoing

Quantitative descriptions and comments

Starting the month of September 2016, the CHW energy consumption pattern appears to becoming steeper. Higher consumption levels are being reach at lower temperatures compared to previous months. Since there is no HHW for this building, an energy balance chart cannot be created to check the change in CHW with the overall building balance.

Explanatory Figure: 13 months energy balance plot with original data



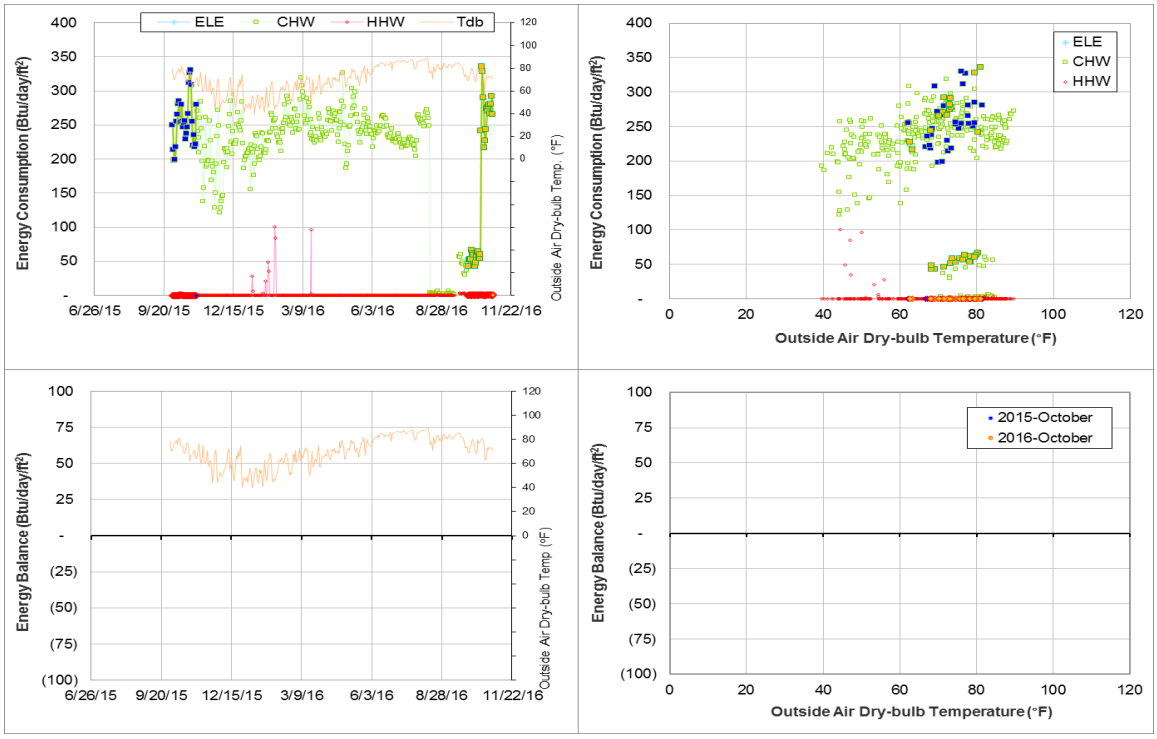
TVMC-Small Animal Building (TAMU Bldg# 880)

Data Type	Description of data behaviors	Period
HHW	The daily consumption is zero or nearly zero for the majority of the days during the year.	Since the data became available in October 2008

Comments

The daily HHW consumption pattern is zero or nearly zero for the majority of the days for years. Because the HHW consumption level appears unstable since the data became available, a valid consumption model for this meter has not been created.

Explanatory Figure: 13 months energy balance plot with original data



Veterinary Medicine Administration (TAMU Bldg# 1026)

Detected issues in the energy balance and/or the consumption data

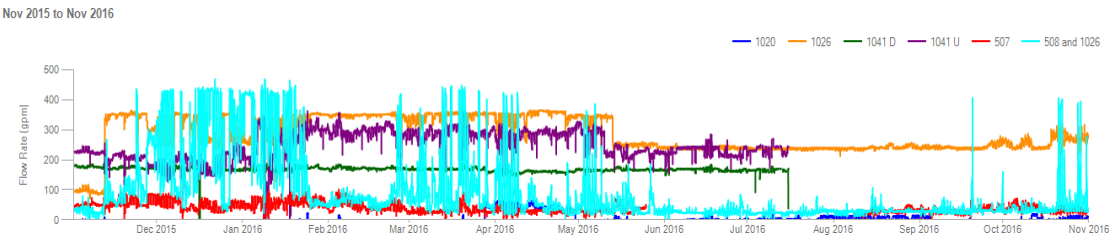
Data Type	Description of data behaviors	Period
HHW 006053	The sub-meter's (006053) flow rate for one building sometimes is higher than the total meter (004170) for two buildings.	For several years

Comments

The HHW meter ID 006053 is a sub-meter of the meter ID 004170 which meters the total energy use in the buildings #508 and 1026. It is questionable that the flow rate of the sub-meter exceeds the flow rate of the main meter. We would like to know the HHW distribution route for the two buildings and the locations of the sensors.

ESL has not received the consumption data for the HHW meter since 10/21/2012.

Explanatory Figure: Time series of hourly HHW flow rates for Veterinary Medicine Administration (Bldg #1026) and neighboring buildings during 11/1/2015–11/1/2016. The combined HHW metered for Bldg #1026 and #508 (light blue) is lower than the standalone HHW meter for only Bldg #1026 (dark blue).



Physical Plant Administration & Shops (TAMU Bldg# 1156)

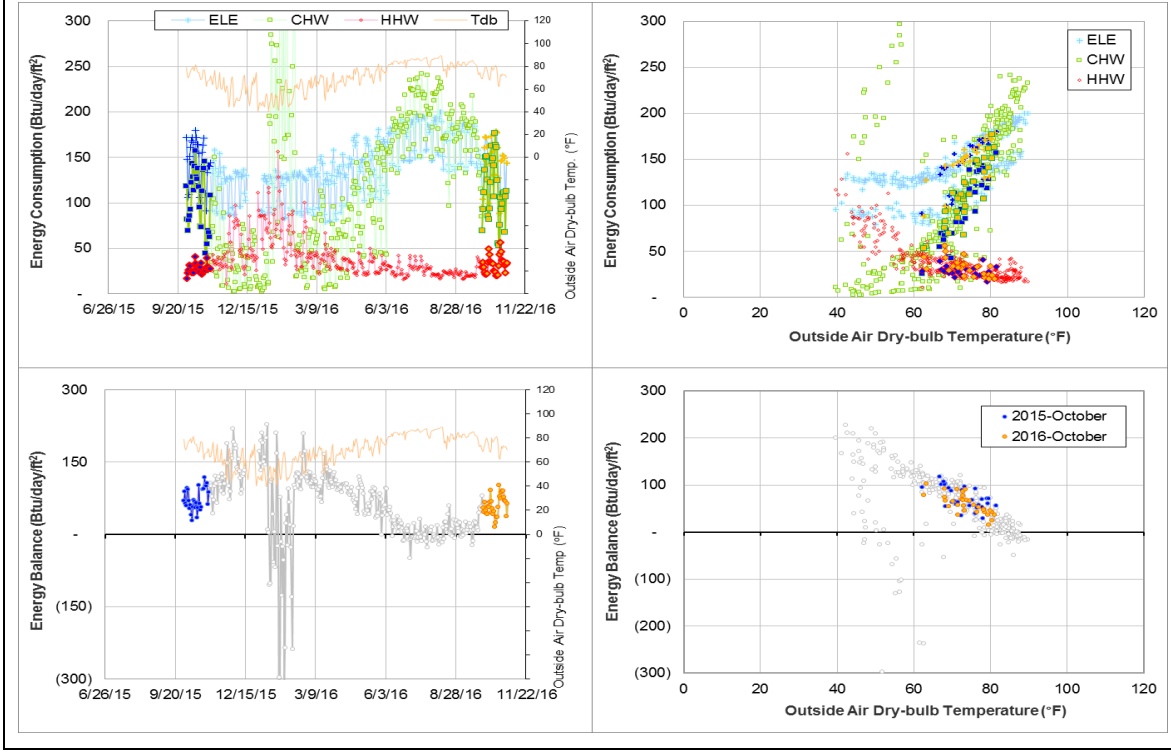
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
Energy Balance	The cross-point temperature is high, ~85°F.	7/1/2014-ongoing
CHW	The consumption level might be low compared to the ELE and HHW use level.	Since the data became available on 7/1/2012.

Comments

The electricity is not available until 7/1/2014. CHW consumption level might be low compared to the ELE and HHW use level. But the CHW consumption level has been stable since the data became available on 7/1/2012. More information might be needed to help identify which type energy causes the high cross-point temperature.

Explanatory Figure: 13 months energy balance plot with original data



Veterinary Large Animal Hospital (TAMU Bldg# 1194)

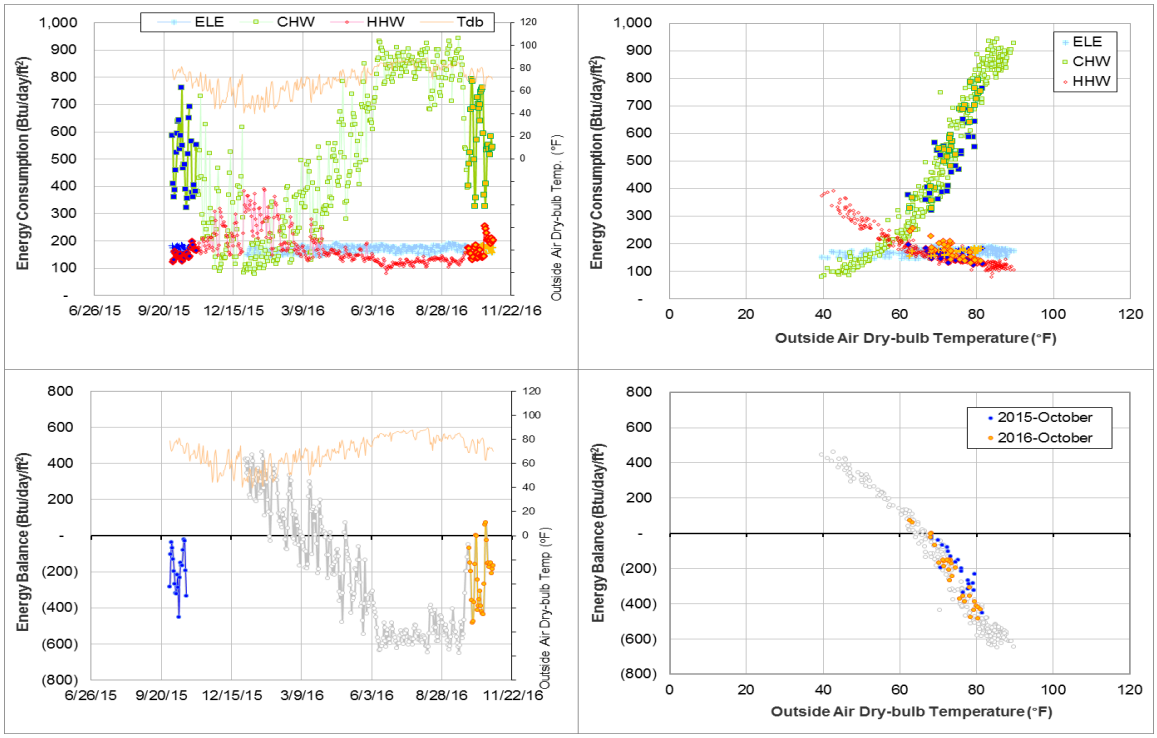
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
HHW	HHW energy consumption increased.	10/21/2016 – Ongoing

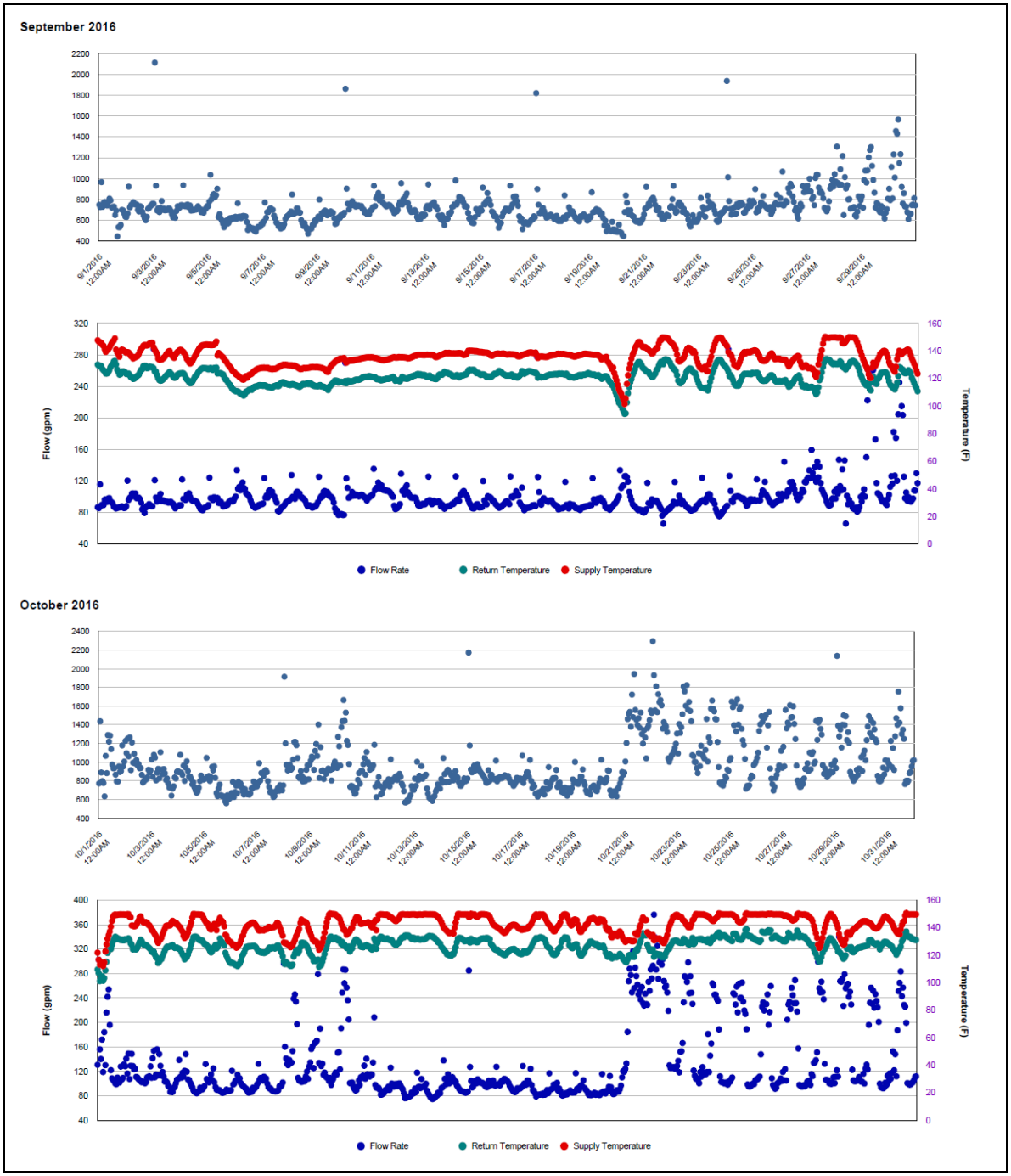
Comments

On 10/26/2016 the HHW flow rate for meter #003652 started to increase during the daytime on a daily basis. The increase in HHW energy consumption pattern reflects the change. This increase could be related to a change in building operations since it is seen on a daily basis.

Explanatory Figure: 13 months energy balance plot with original data



Explanatory Figure: Time series plots of hourly HHW energy consumption, flow rate, and supply and return temperatures from utilities office for meter #003652. (top: September 2016, bottom: October 2016)



Veterinary Research Building (TAMU Bldg# 1197)

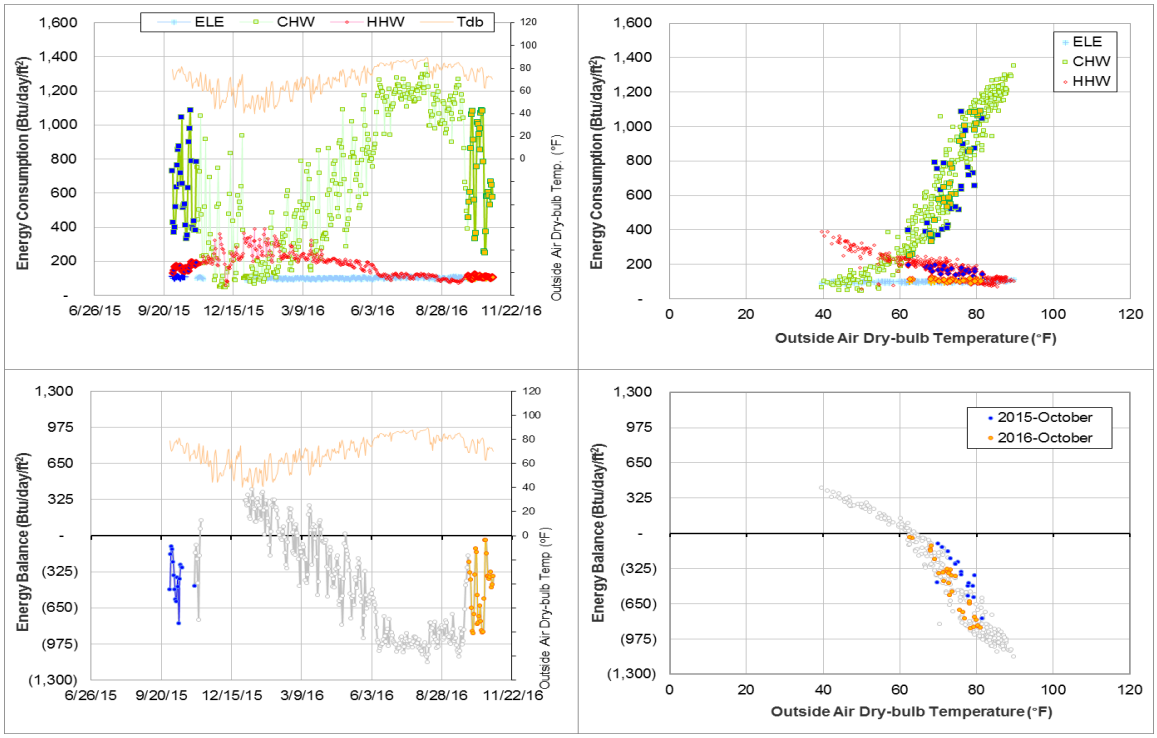
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
ELE	The consumption is low for a laboratory building.	Since January 2010 when the meter was added to this report

Comments

The whole building hourly electricity use is in the range 130 kWh to 180 kWh (1.13 W/ft^2 to 1.57 W/ft^2), which is low for a veterinary laboratory building on the campus. This seems to be the reason for the low level of the energy balance load. The temperature-axis intercept of the energy balance is around 62°F.

Explanatory Figure: 13 months energy balance plot with original data



Reynolds Medical Sciences Building (TAMU Bldg# 1504)

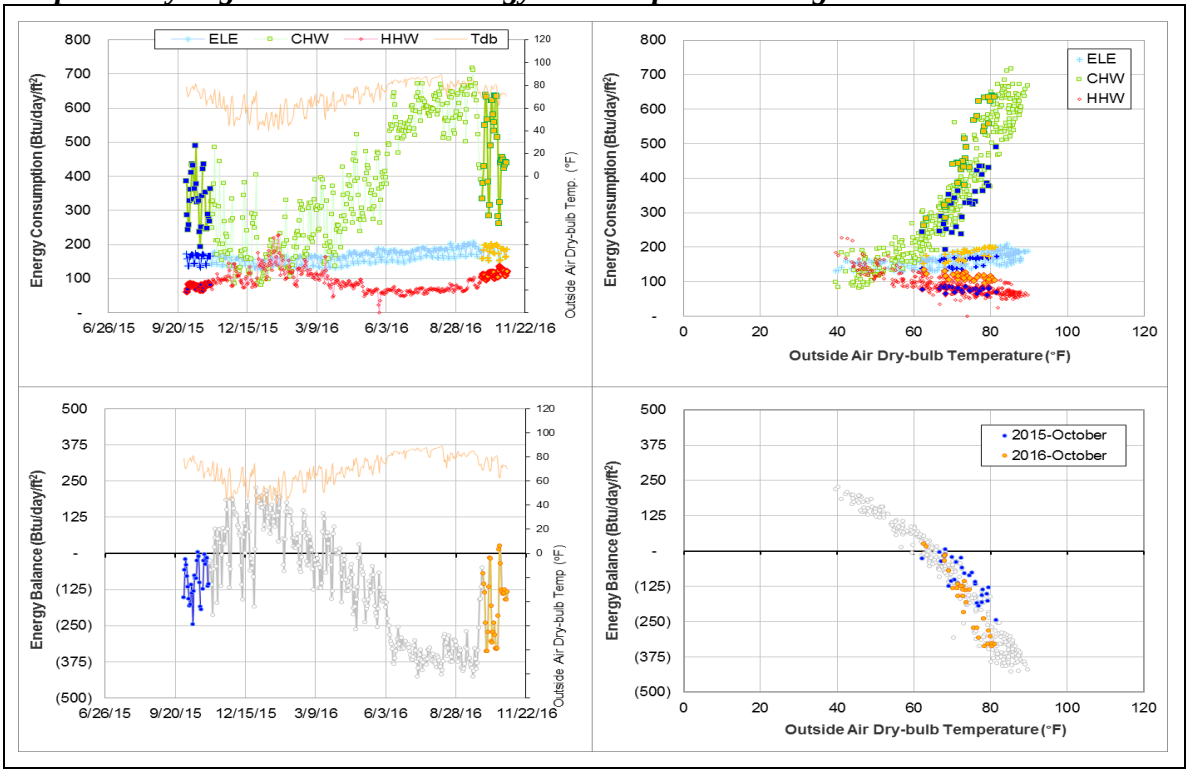
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
CHW	Slight increase in energy consumption pattern.	September 2016 – Ongoing
HHW	Increase in energy consumption pattern	September 2016 – Ongoing

Comments

The HHW energy consumption pattern has increased by approximately 40 Btu/day/ft^2 starting in September 2016. Around the same time the CHW and ELE energy consumption also shows a slight increase. Even though the energy consumption has increased, the energy balance for the building is still within the range of last year.

Explanatory Figure: 13 months energy balance plot with original data



International Ocean Discovery Building (TAMU Bldg #1601)

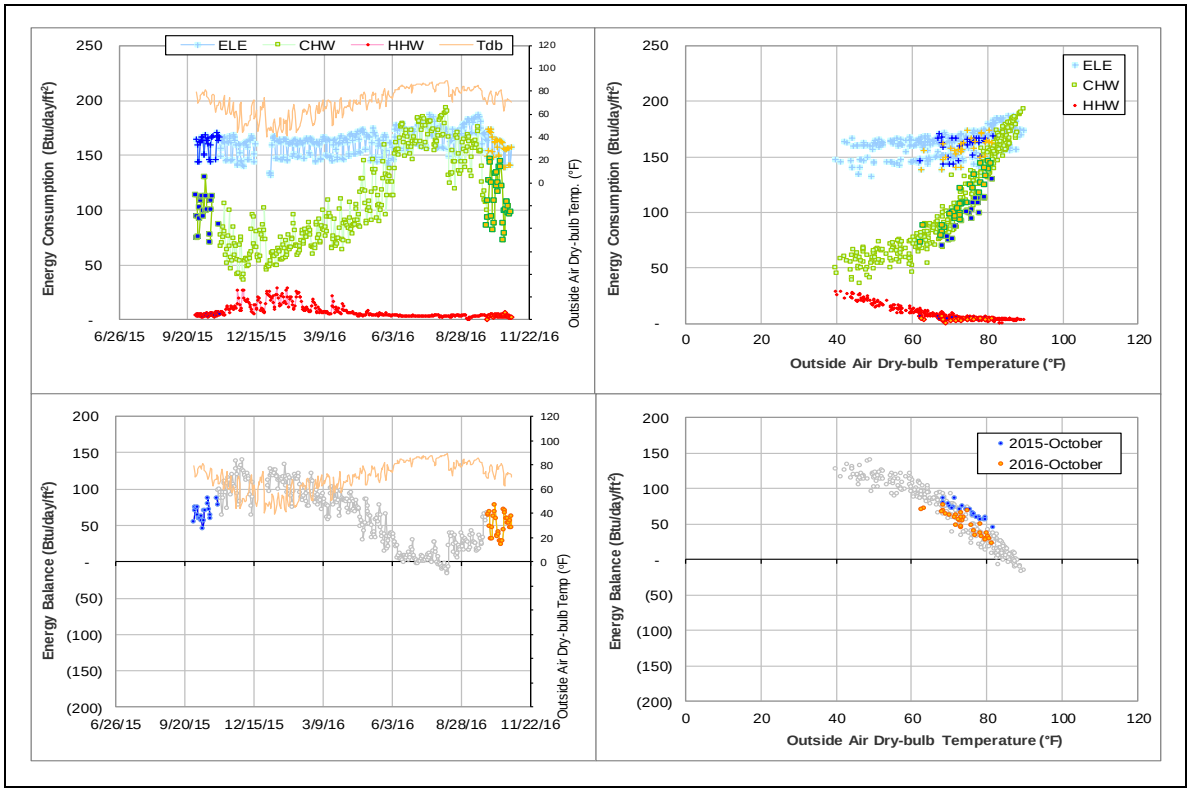
Detected issues in the energy balance and/or the consumption data

Data Type	Description of data behaviors	Period
Energy Balance	The cross-point is high, around 85°F.	Since data became available in Feb 2015

Comments

The cross-point temperature is high for this building, around 85°F. The daily CHW consumption for last year is 40 – 200 Btu/day/ft^2. The CHW consumption level is low compared to ELE and HHW levels. This building might have its chillers.

Explanatory Figure: 13 months energy balance plot with original data



Offshore Technology Research Center (TAMU Bldg #1604)

Detected issues in the energy balance and/or the consumption data

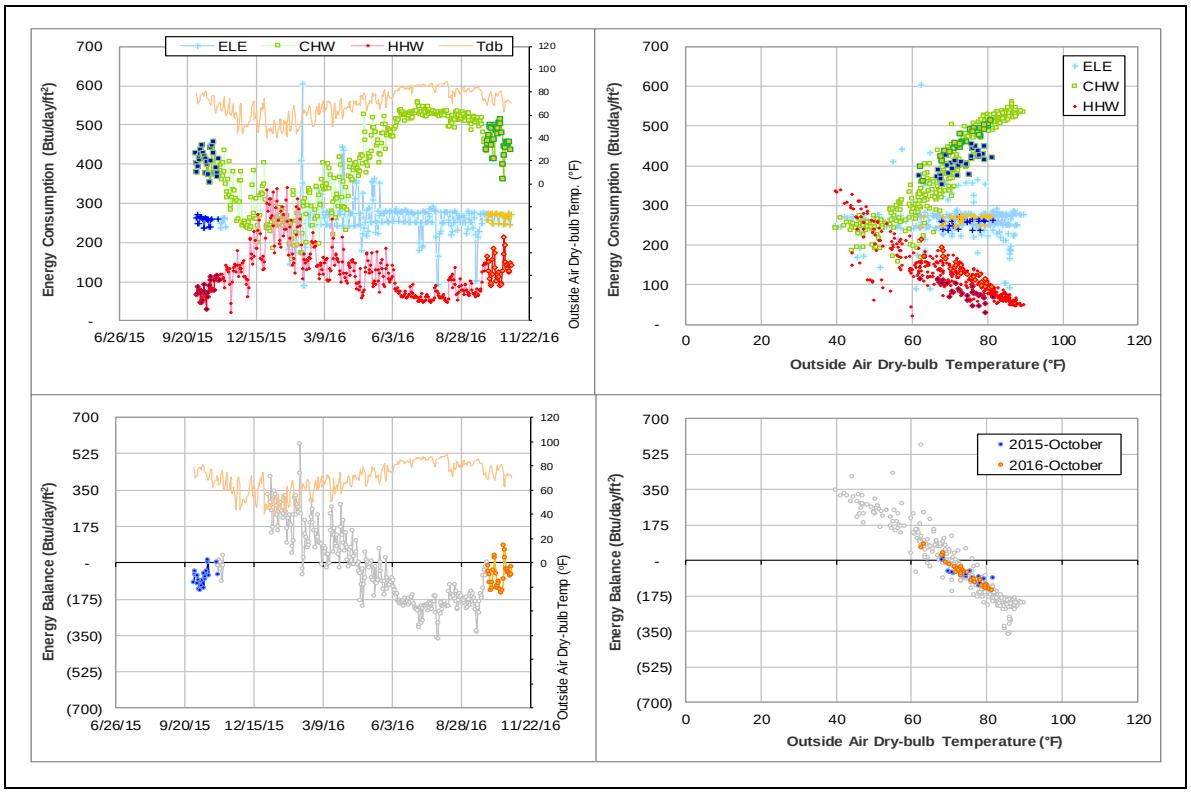
Data Type	Description of data behaviors	Period
ELE (006660)	The daily consumption was recorded as zero for the majority of the days.	Since data became available in Feb 2015
CHW and HHW	The consumption level is higher than that of last year.	5/1/2016-ongoing

Comments

Both CHW and HHW consumption level is higher than that of last year in this month.

There are two ELE meters (006659 and 006660). The daily consumption for MeterID 006660 was recorded as zero for the majority of the days since data became available in February 2015. The daily consumption for several days in recent several months increased largely and caused scattering energy balance.

Explanatory Figure: 13 months energy balance plot with original data



III. Time Series Plots for October 2016 Consumption

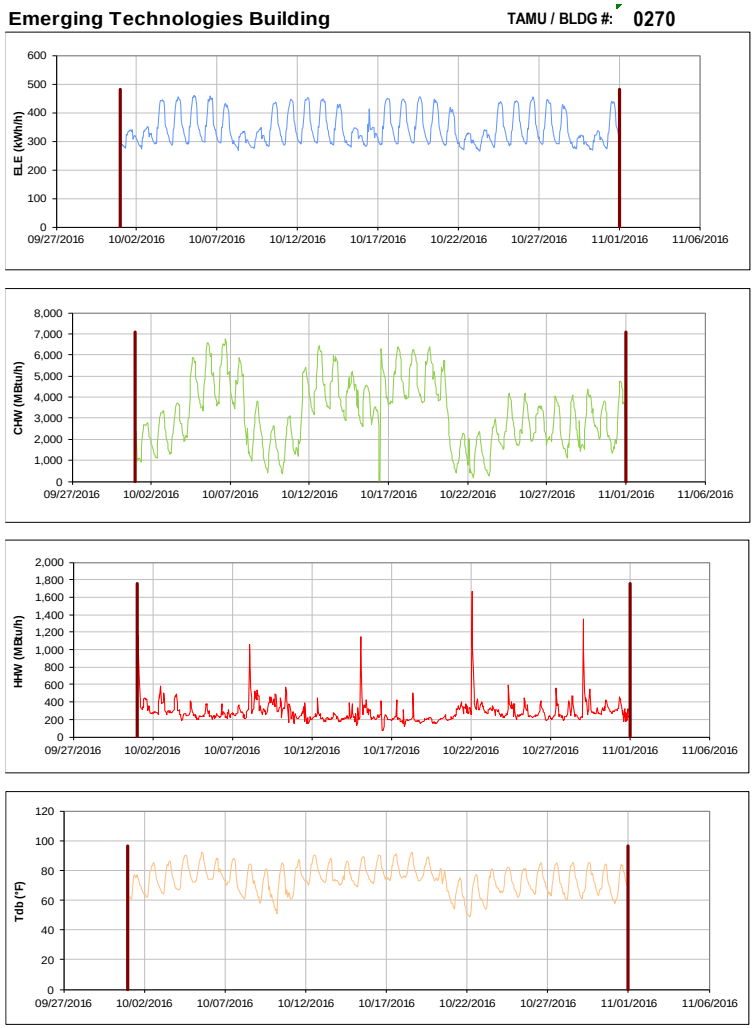


Figure III-1 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Emerging Technologies Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

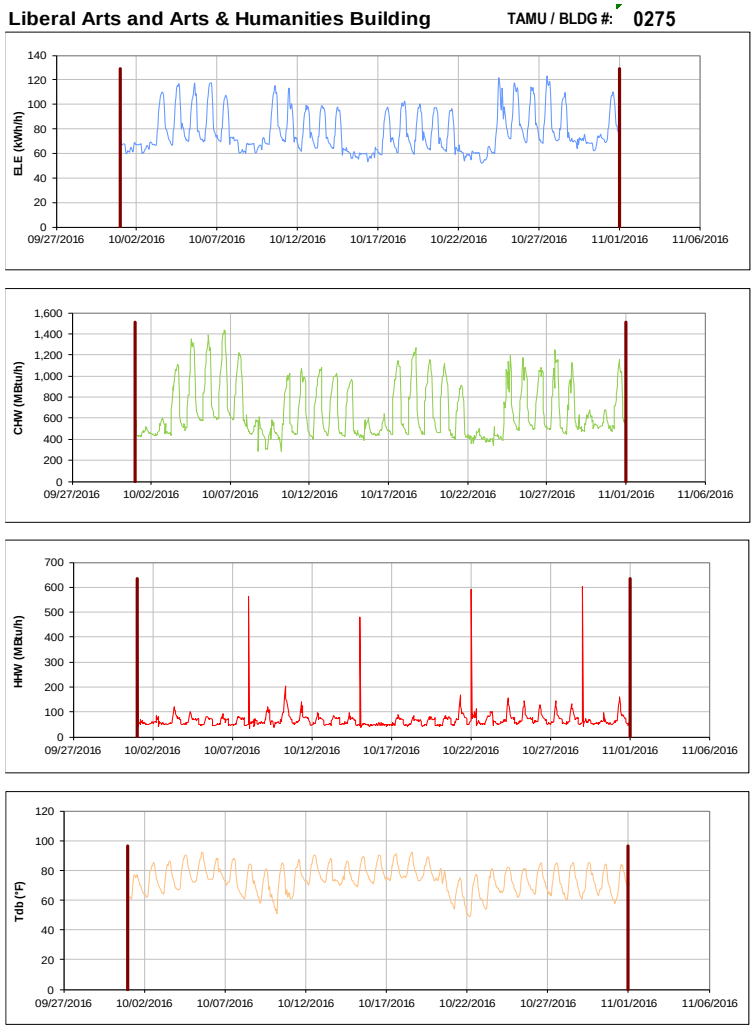


Figure III-2 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Liberal Arts and Arts & Humanities Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

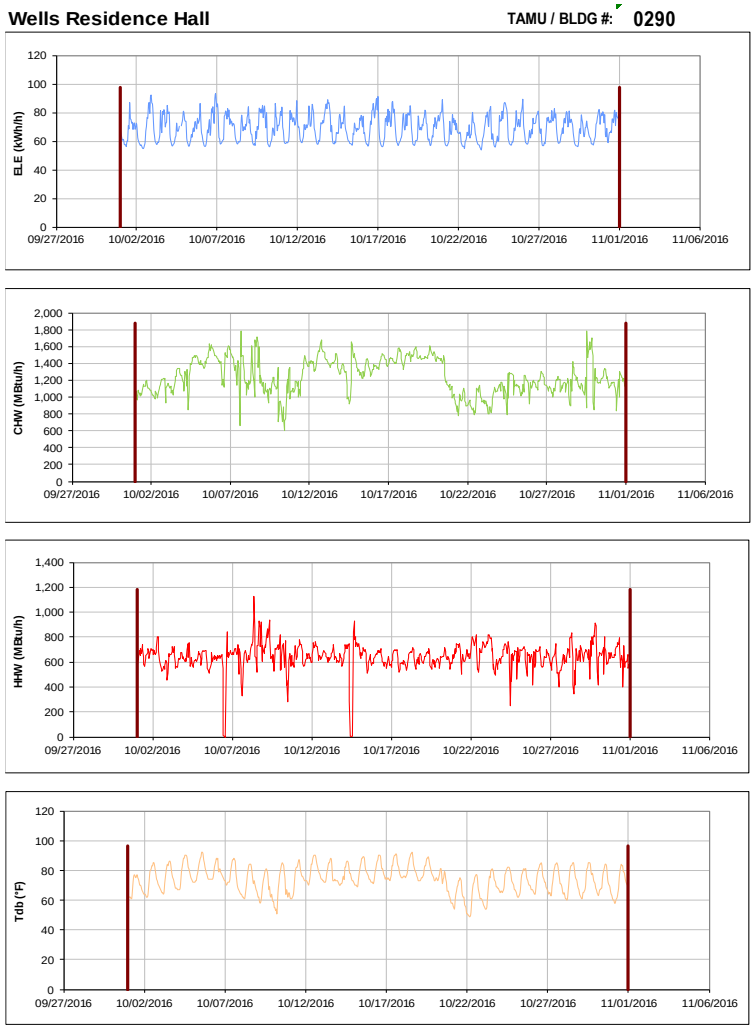


Figure III-3 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Wells Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

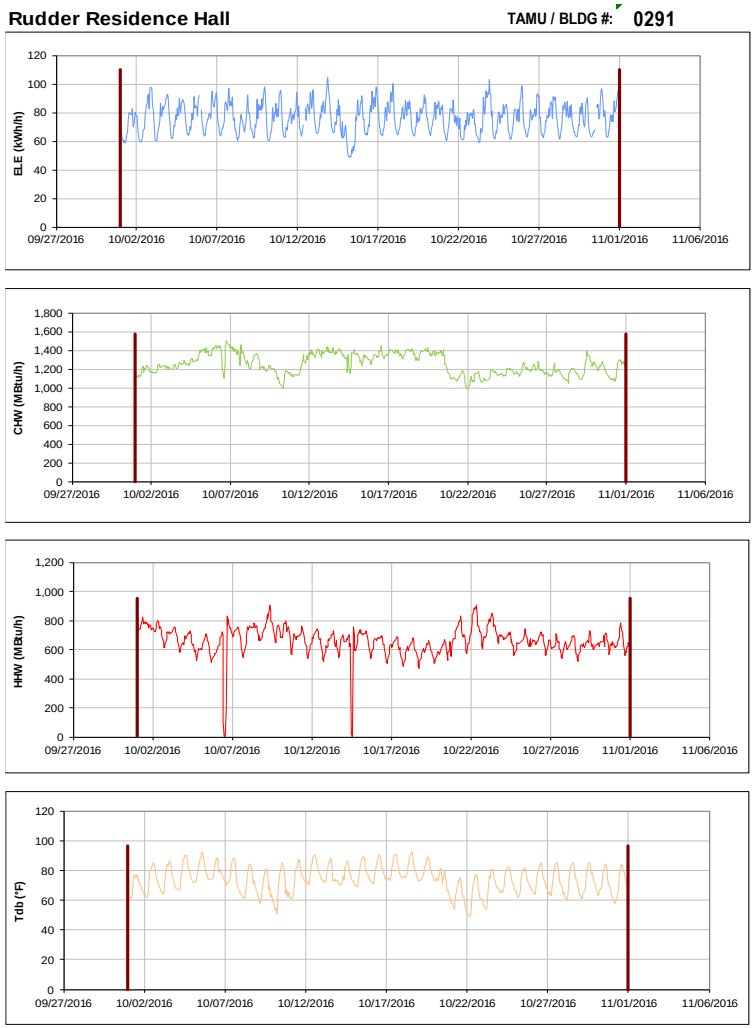


Figure III-4 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Rudder Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

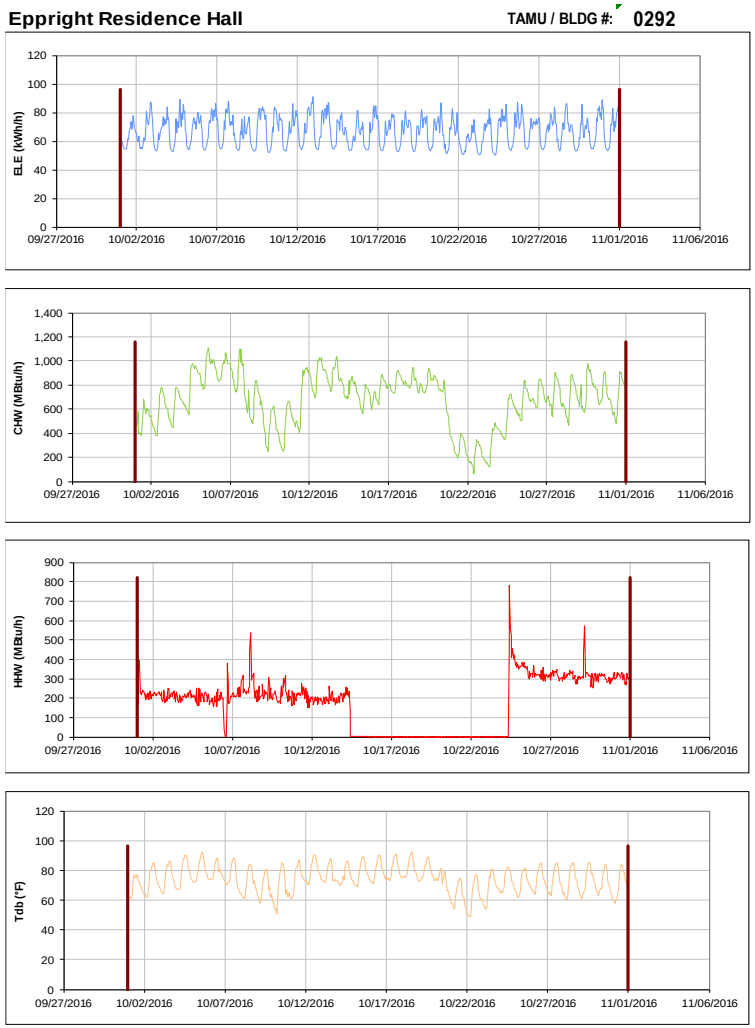


Figure III-5 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Eppright Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

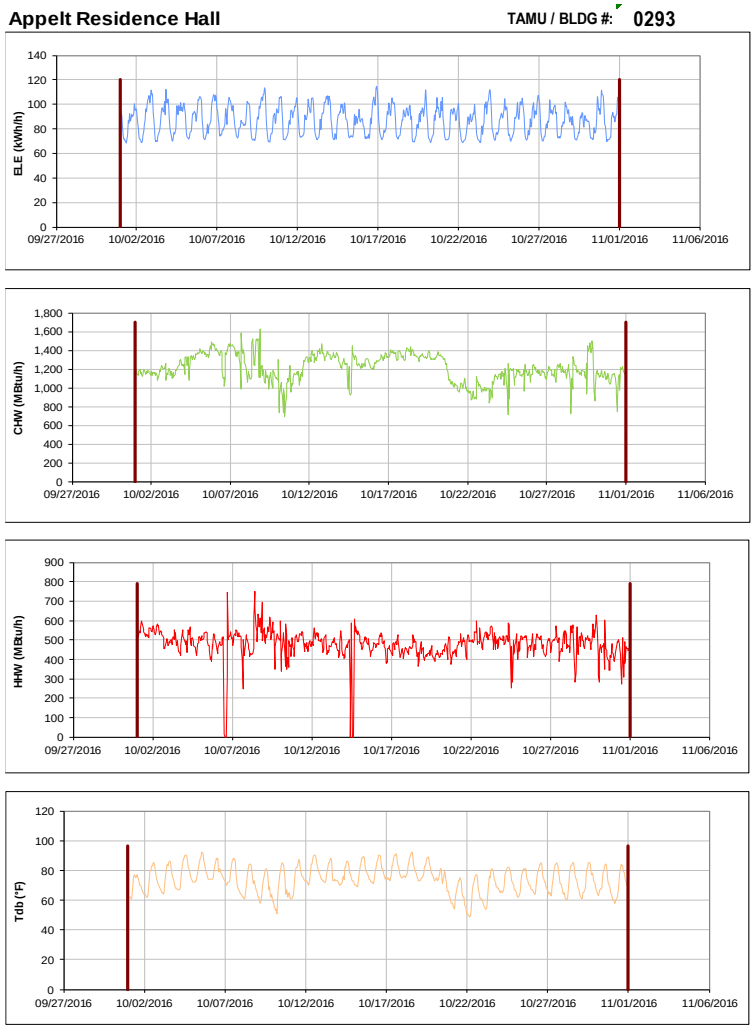


Figure III-6 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Appelt Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

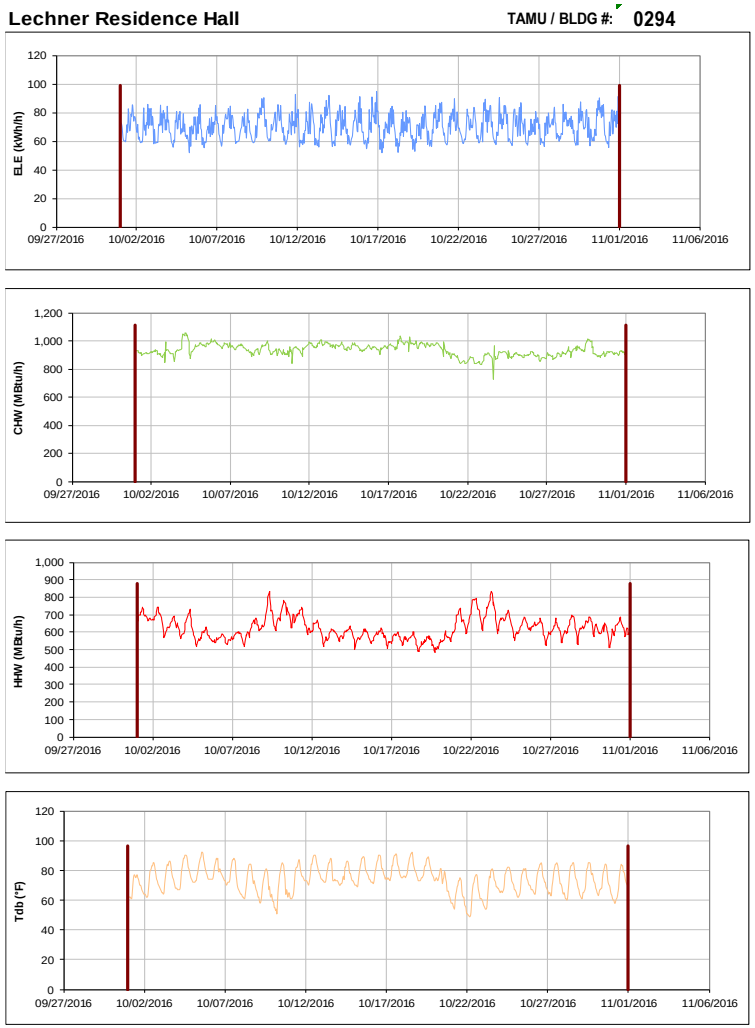


Figure III-7 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Lechner Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-8 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Mitchell Inst. for Fundamental Phys & Astronomy during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

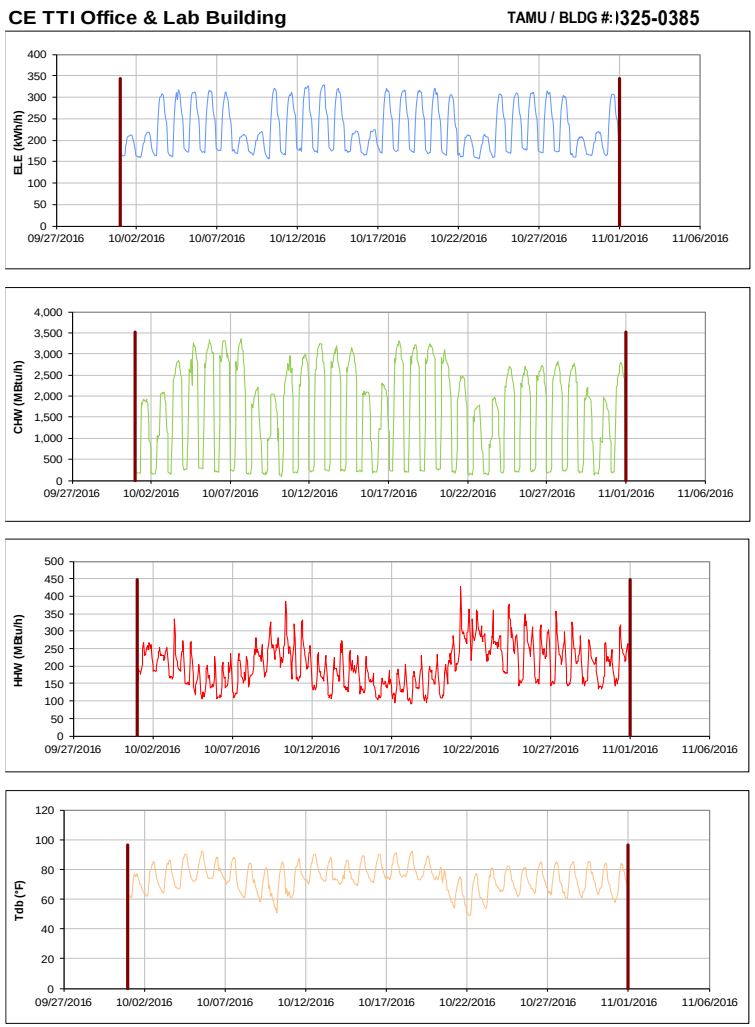


Figure III-9 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for CE TTI Office & Lab Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

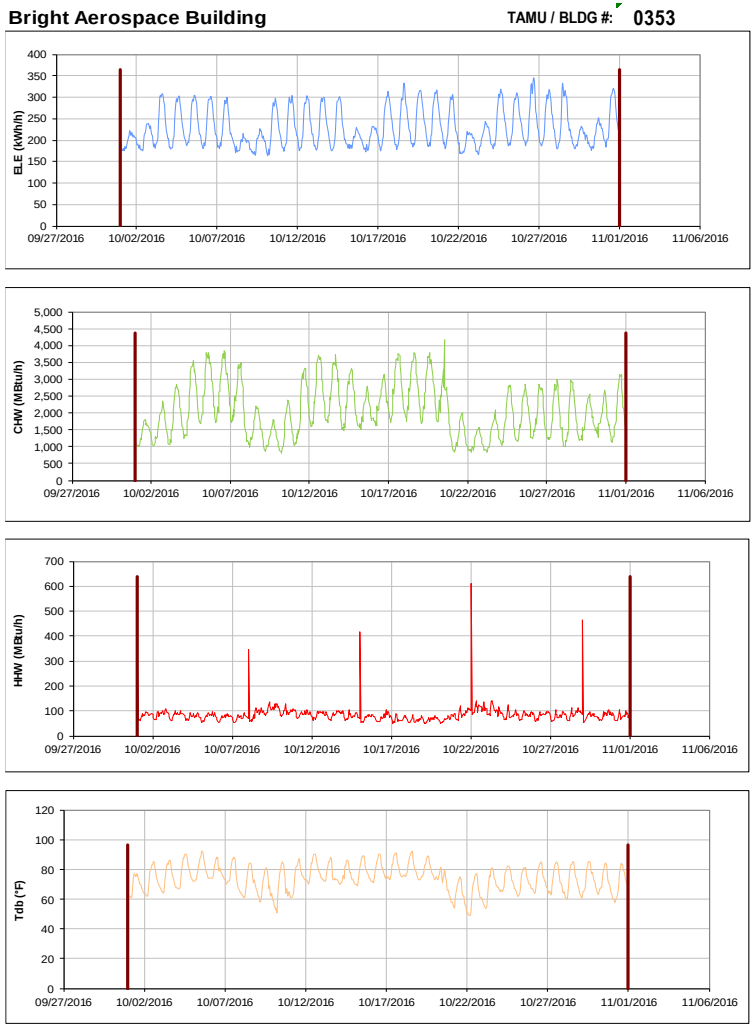


Figure III-10 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Bright Aerospace Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

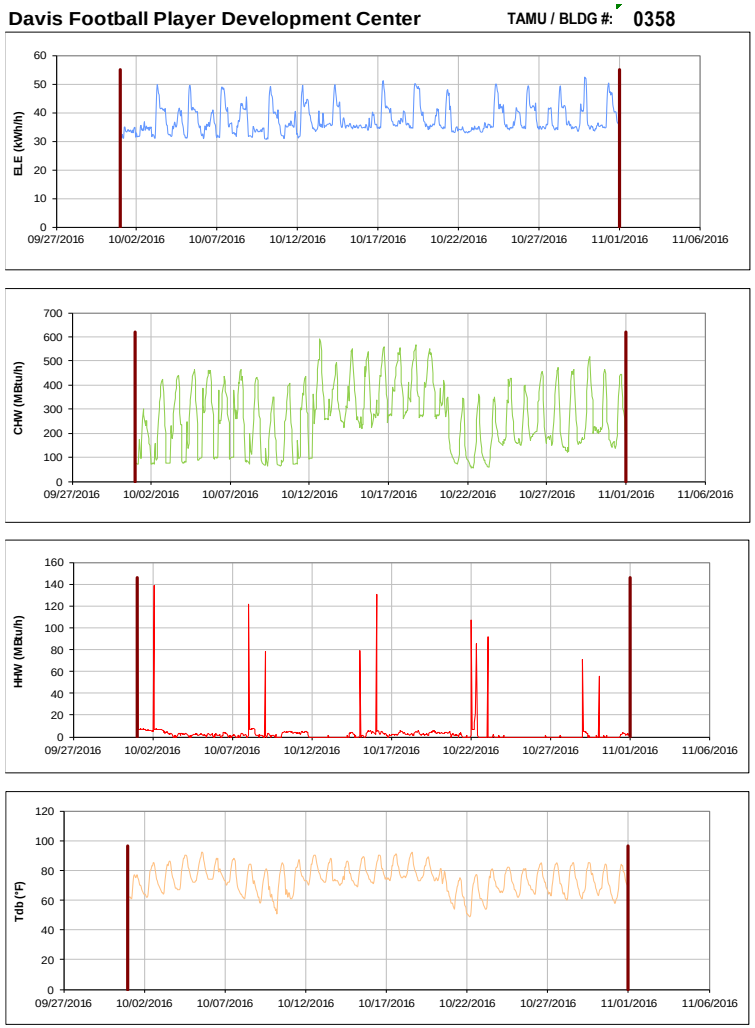


Figure III-11 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Davis Football Player Development Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

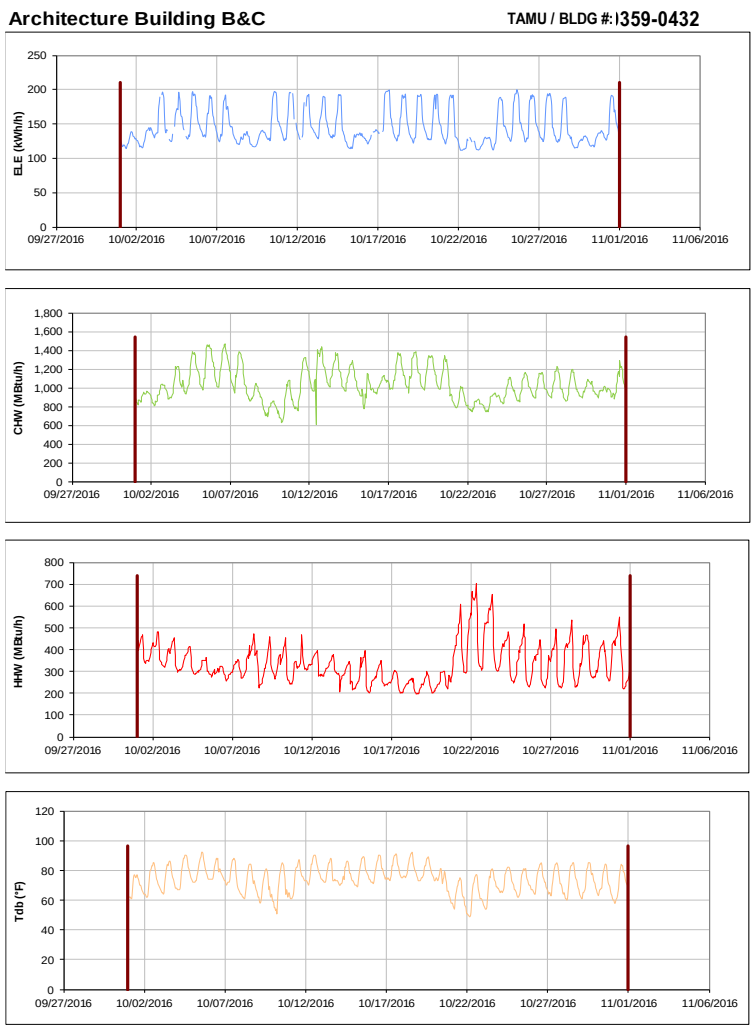


Figure III-12 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Architecture Building B&C during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

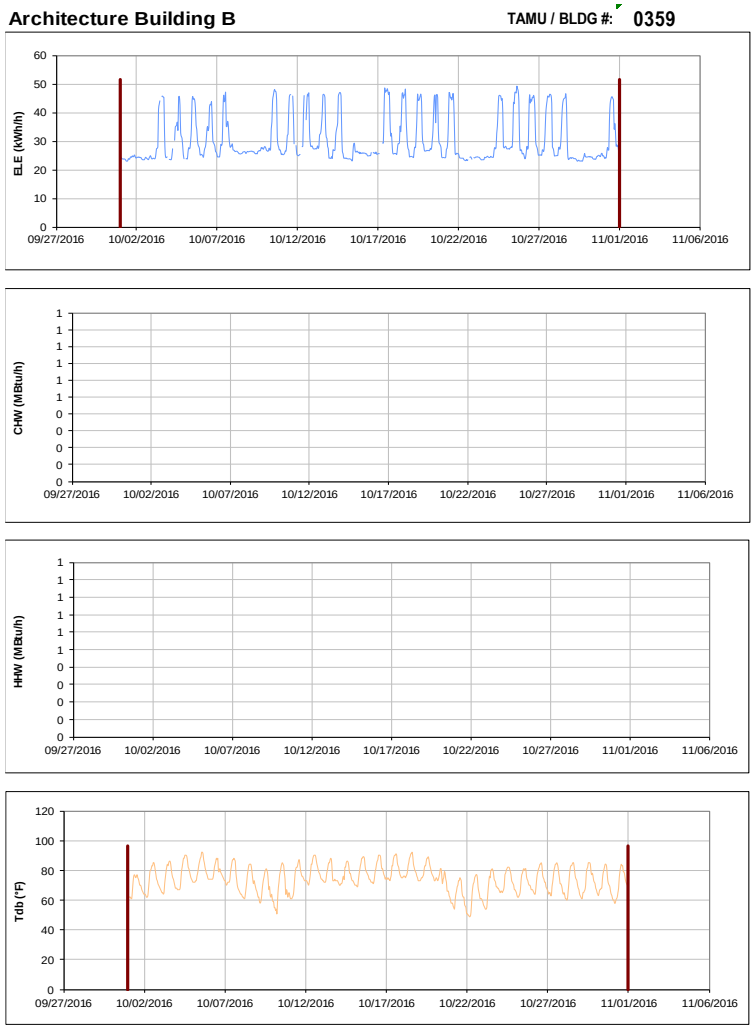


Figure III-13 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Architecture Building B during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

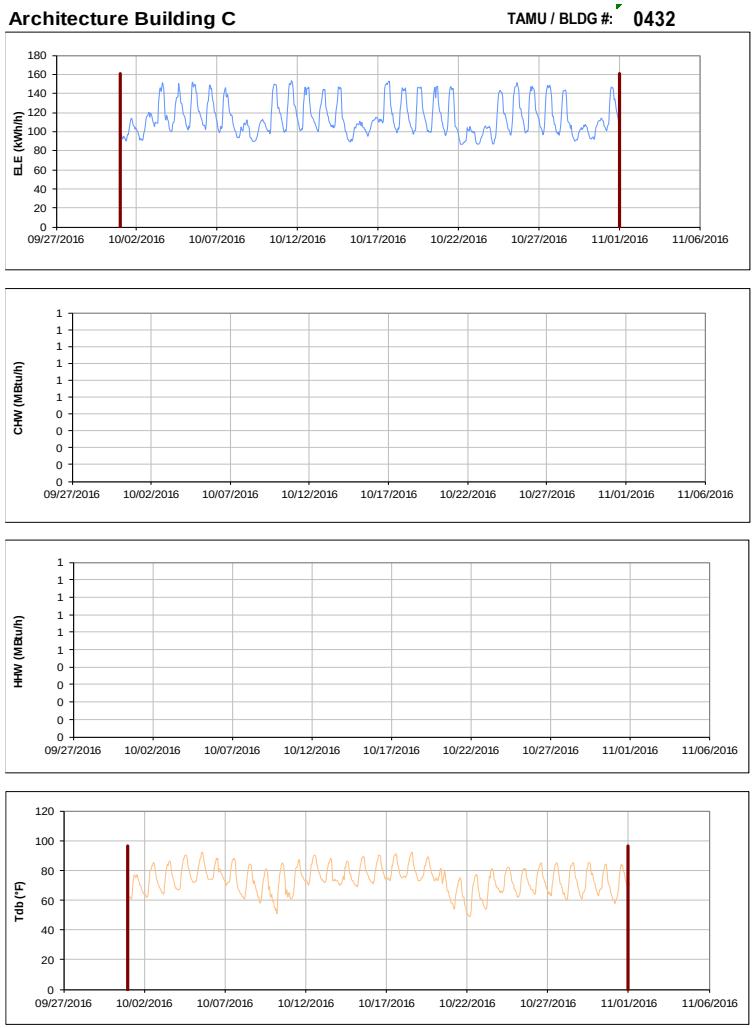


Figure III-14 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Architecture Building C during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-15 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Bright Football Complex during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

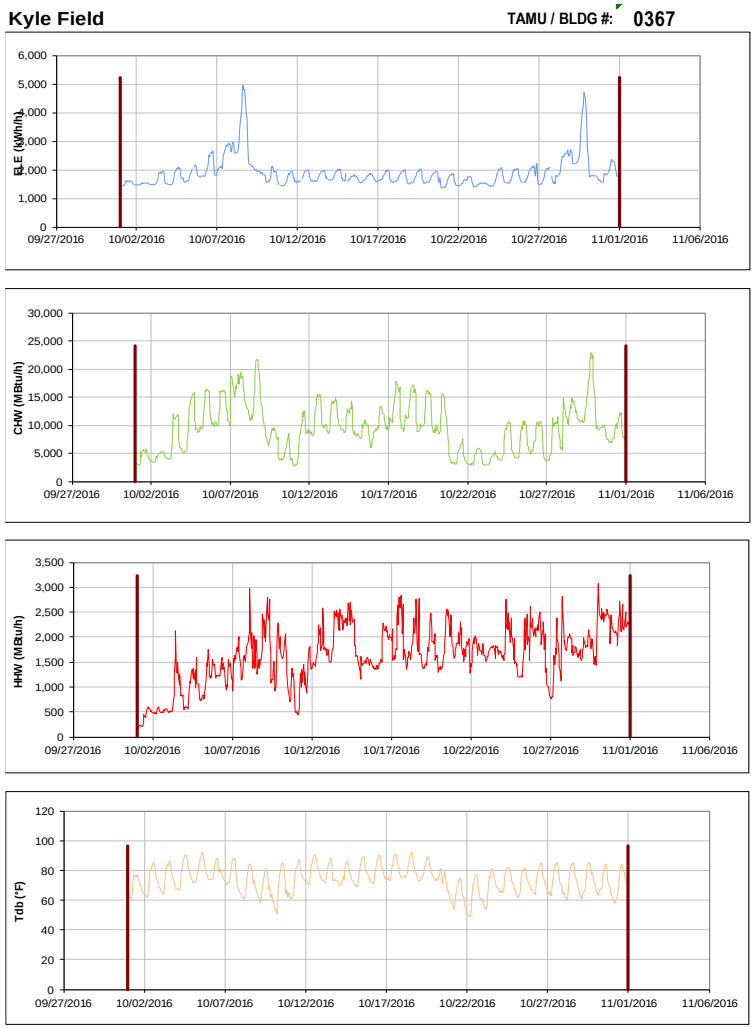


Figure III-16 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Kyle Field during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-17 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Chemistry Building Addition during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

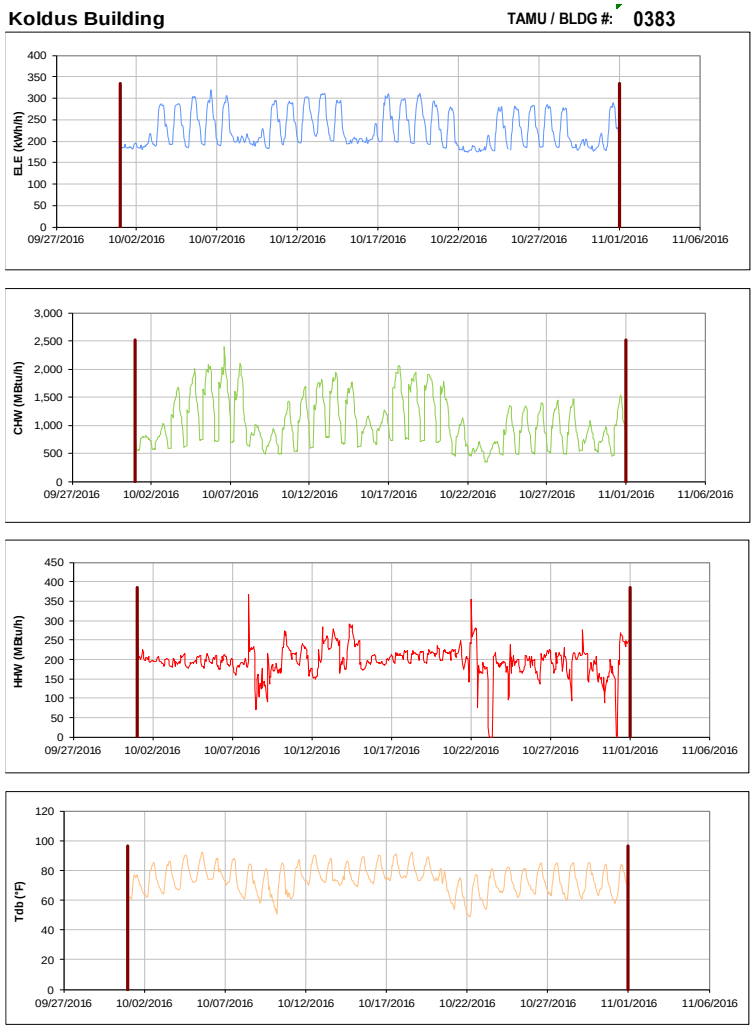


Figure III-18 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Koldus Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

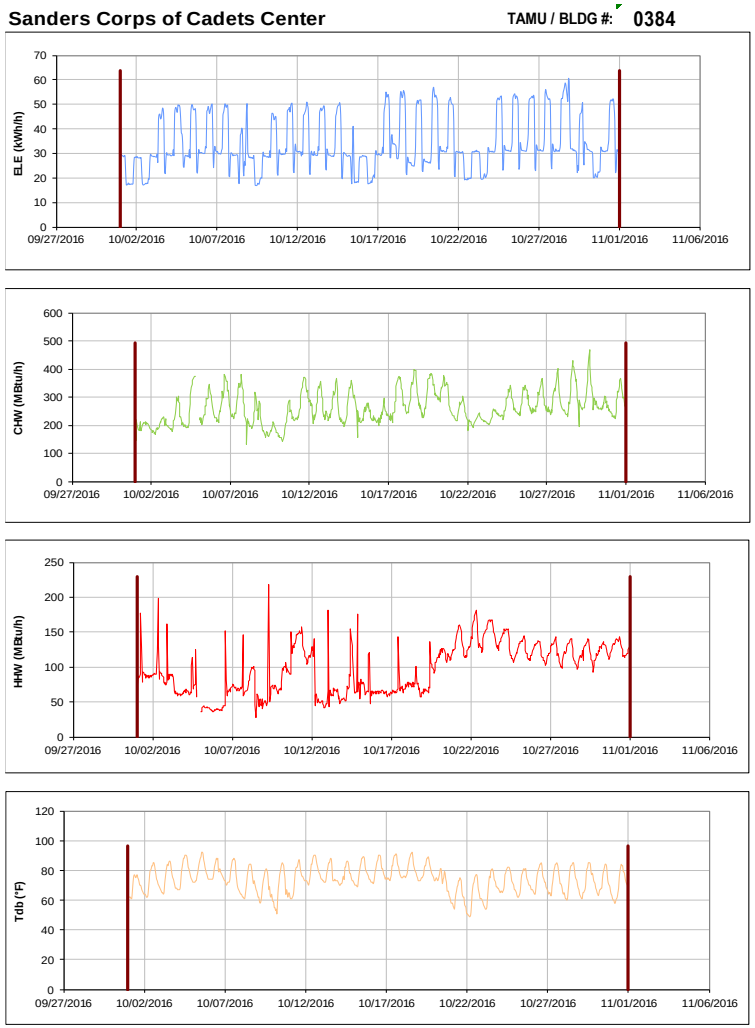


Figure III-19 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Sanders Corps of Cadets Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

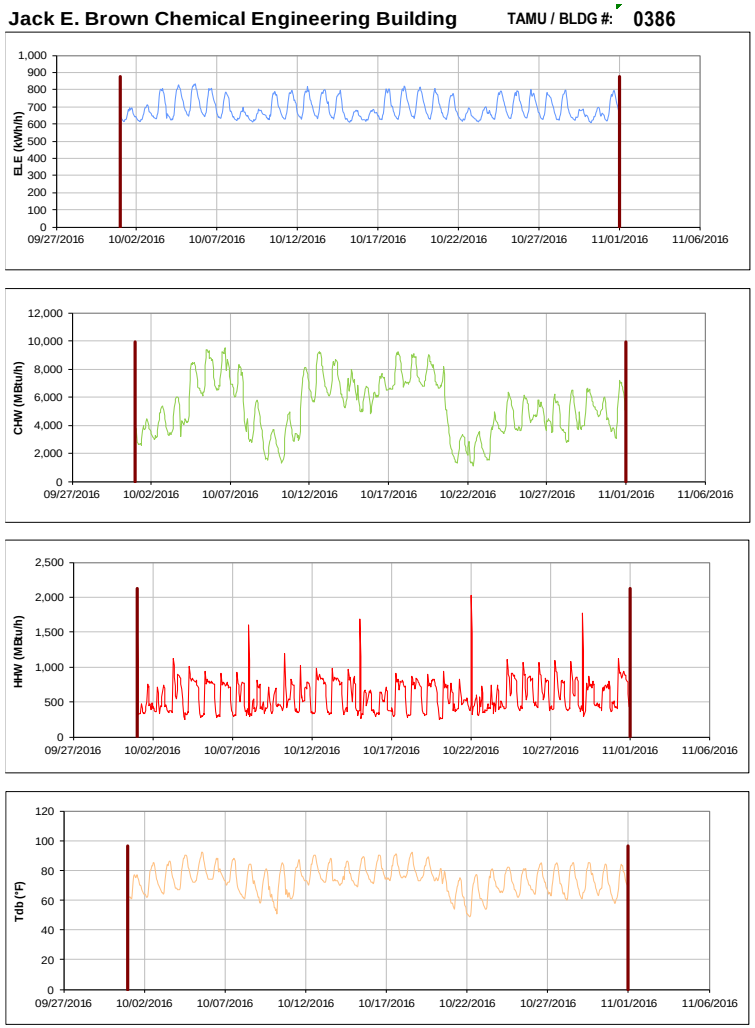


Figure III-20 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Jack E. Brown Chemical Engineering Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

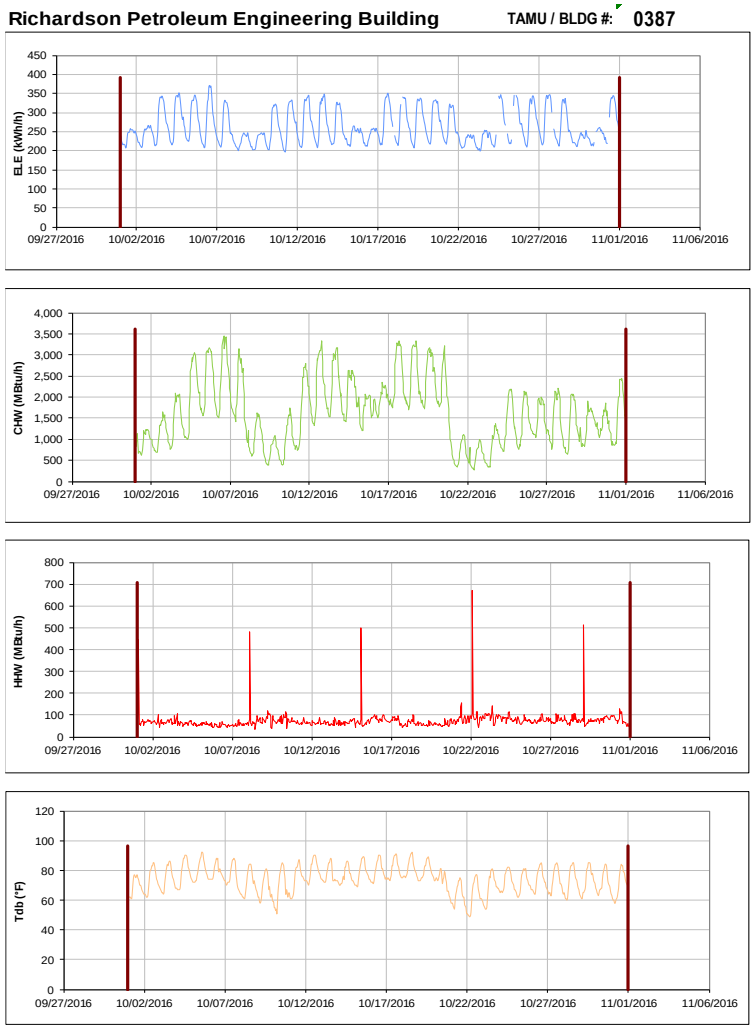


Figure III-21 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Richardson Petroleum Engineering Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

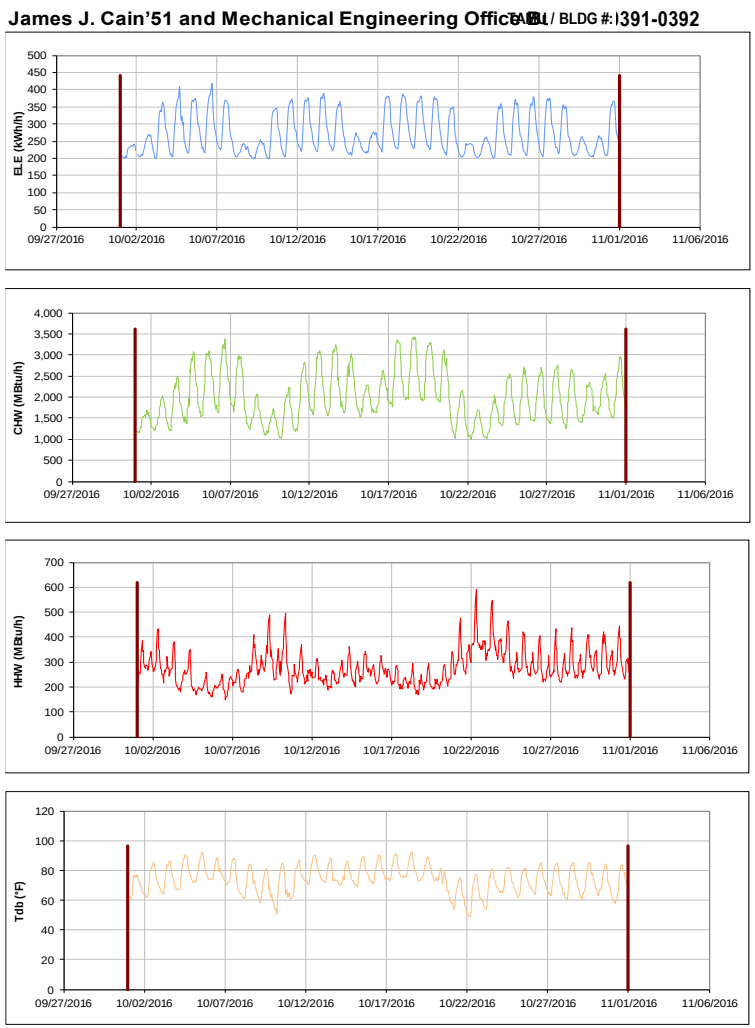


Figure III-22 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for James J. Cain'51 and Mechanical Engineering Office Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

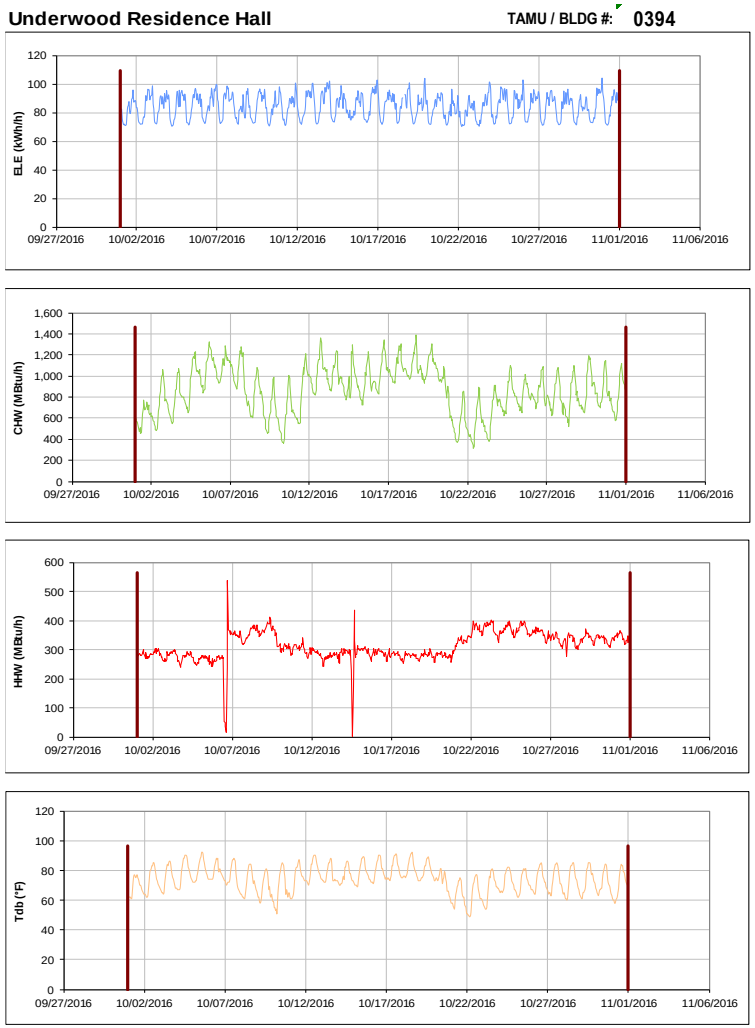


Figure III-23 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Underwood Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

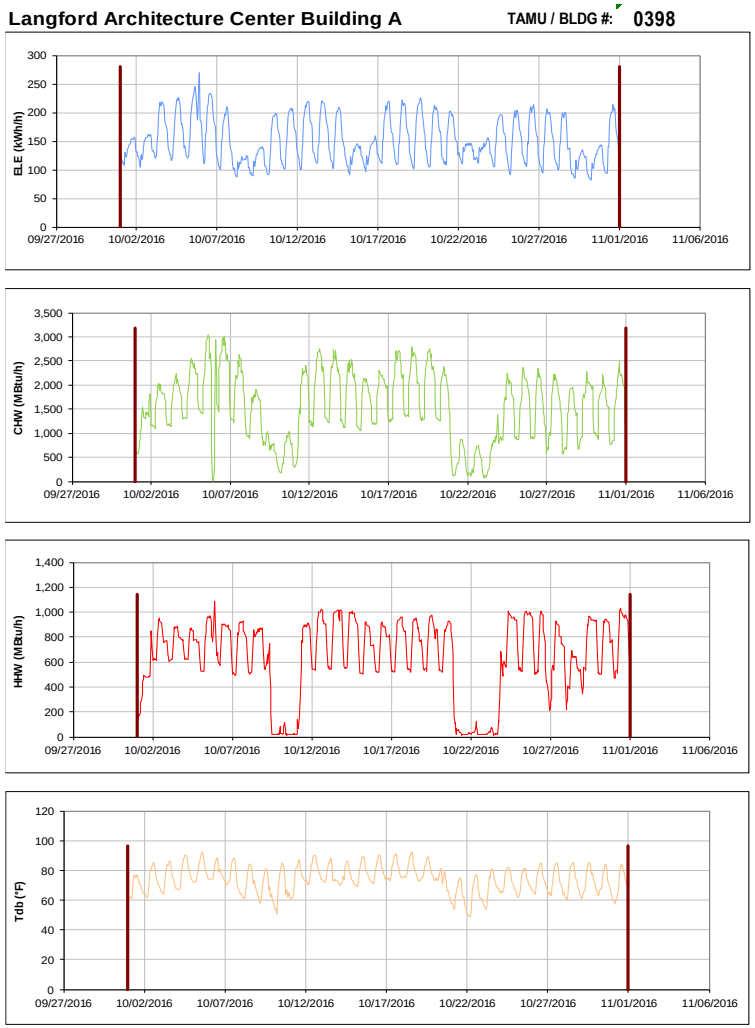


Figure III-24 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Langford Architecture Center Building A during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

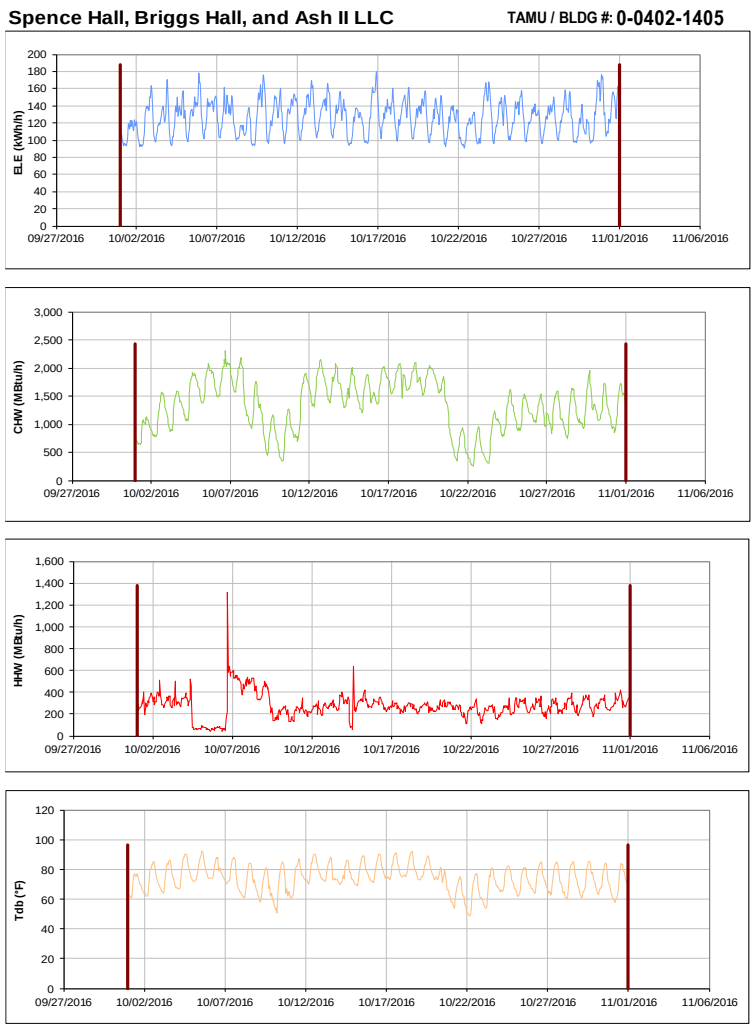


Figure III-25 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Spence Hall, Briggs Hall, and Ash II LLC during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

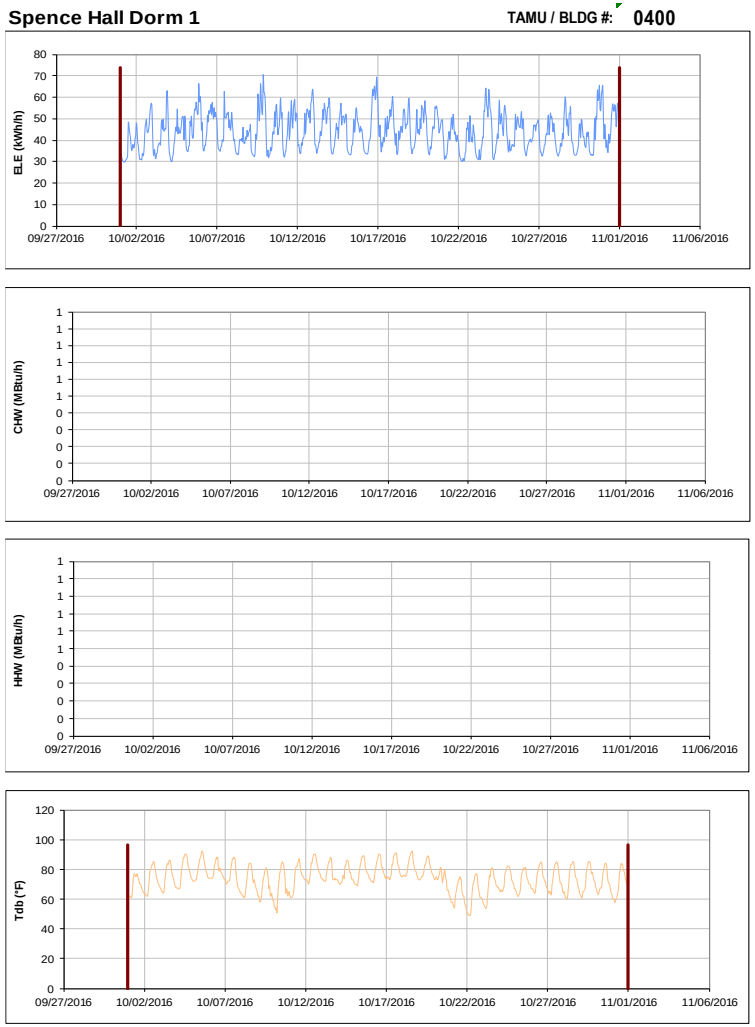


Figure III-26 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Spence Hall Dorm 1 during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

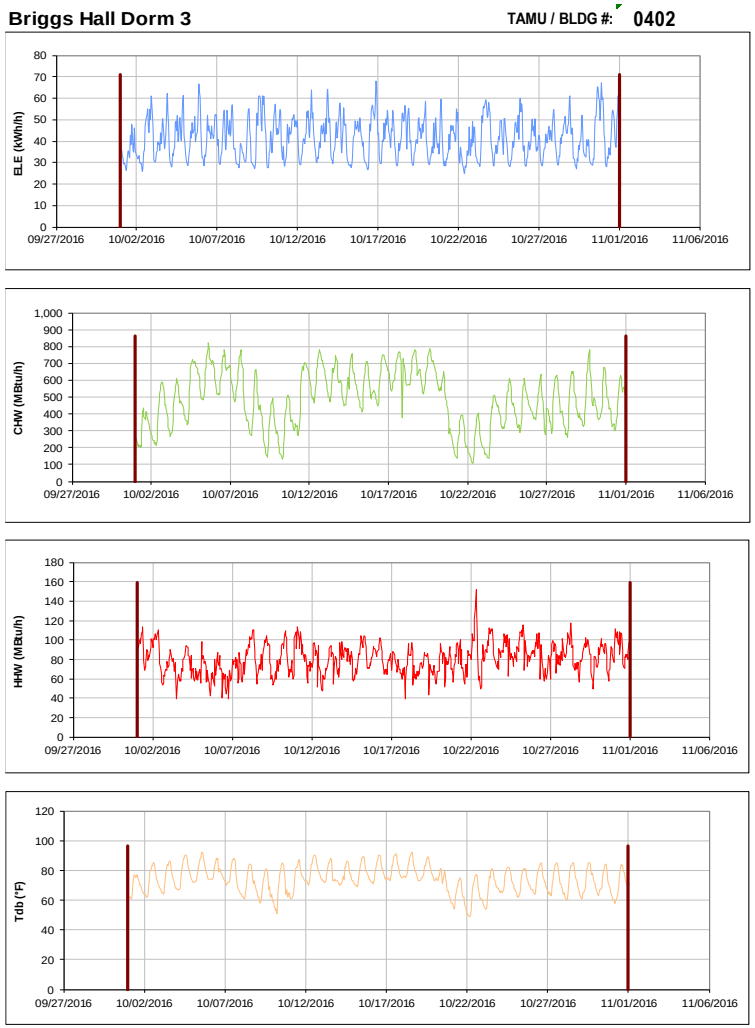


Figure III-27 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Briggs Hall Dorm 3 during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

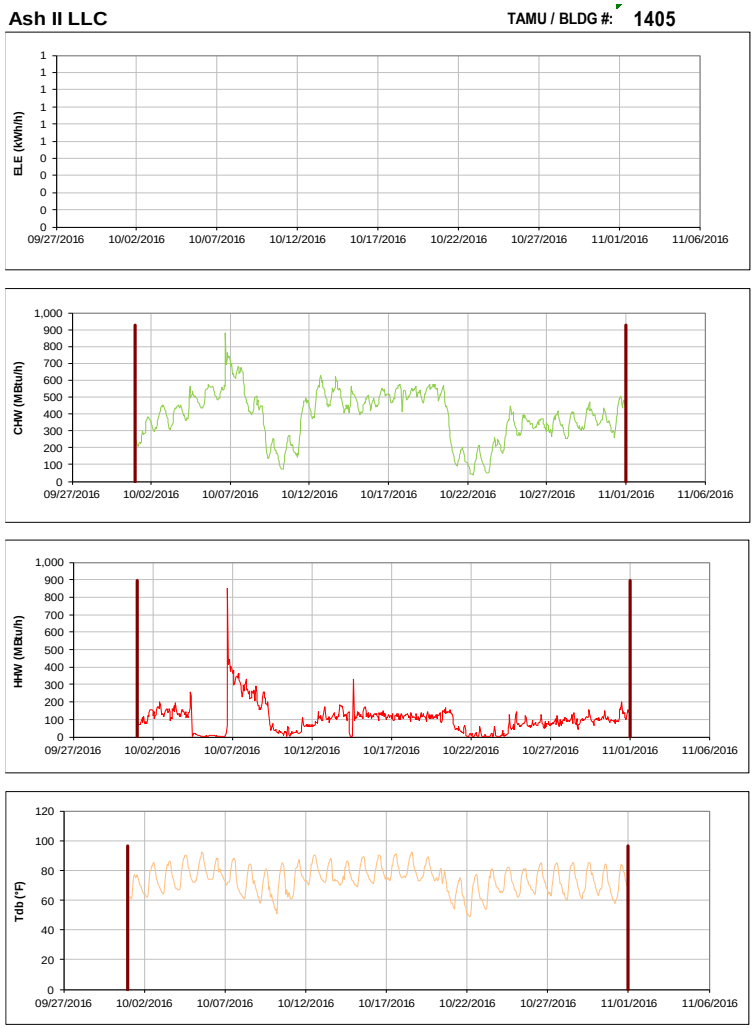


Figure III-28 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Ash II LLC during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

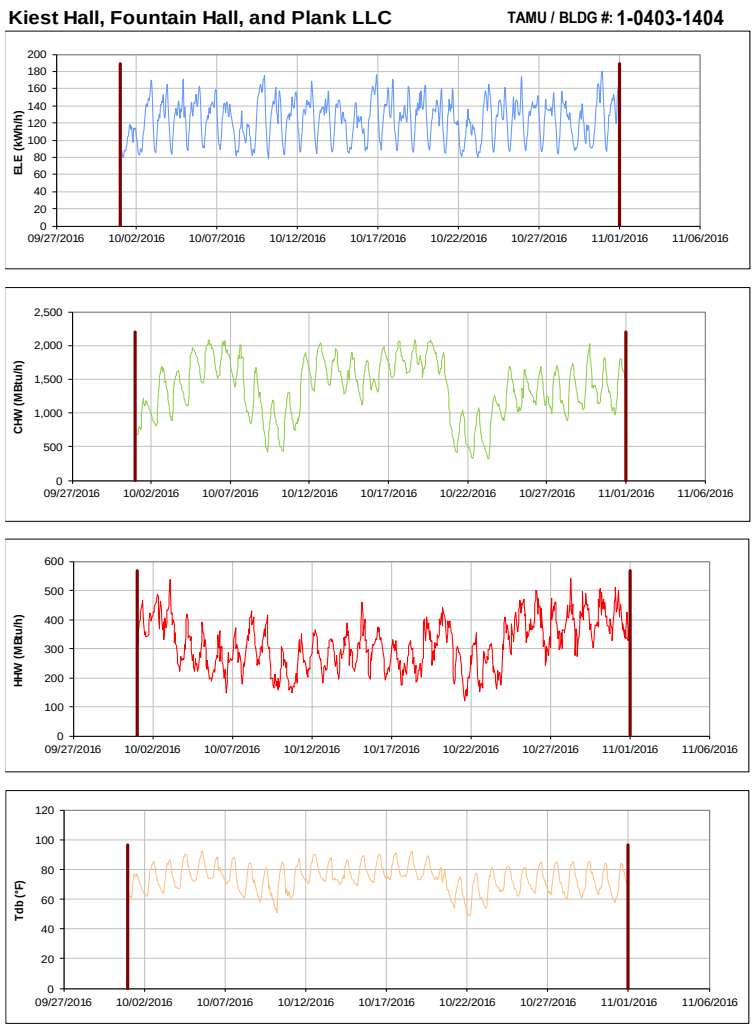


Figure III-29 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Kiest Hall, Fountain Hall, and Plank LLC during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

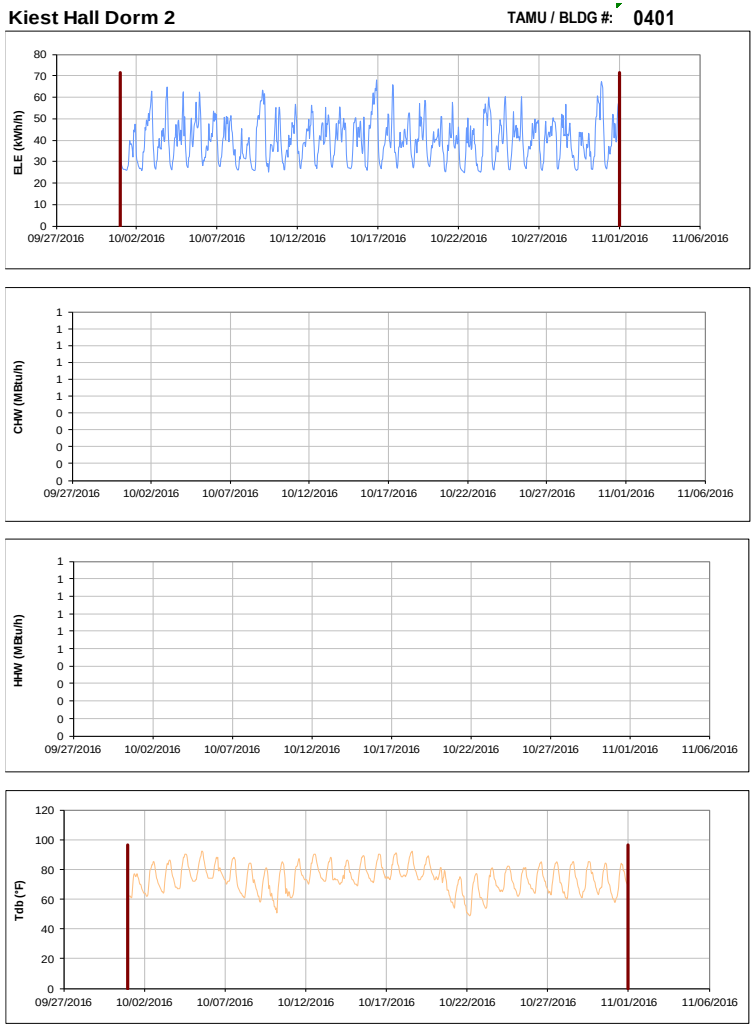


Figure III-30 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Kiest Hall Dorm 2 during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

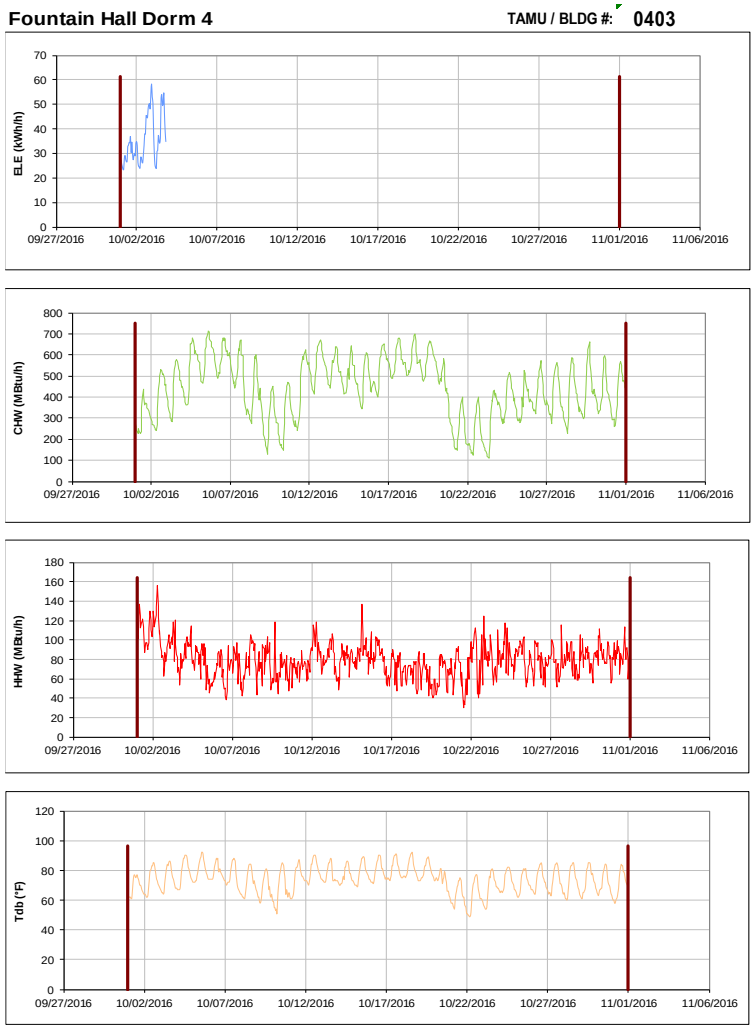


Figure III-31 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Fountain Hall Dorm 4 during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

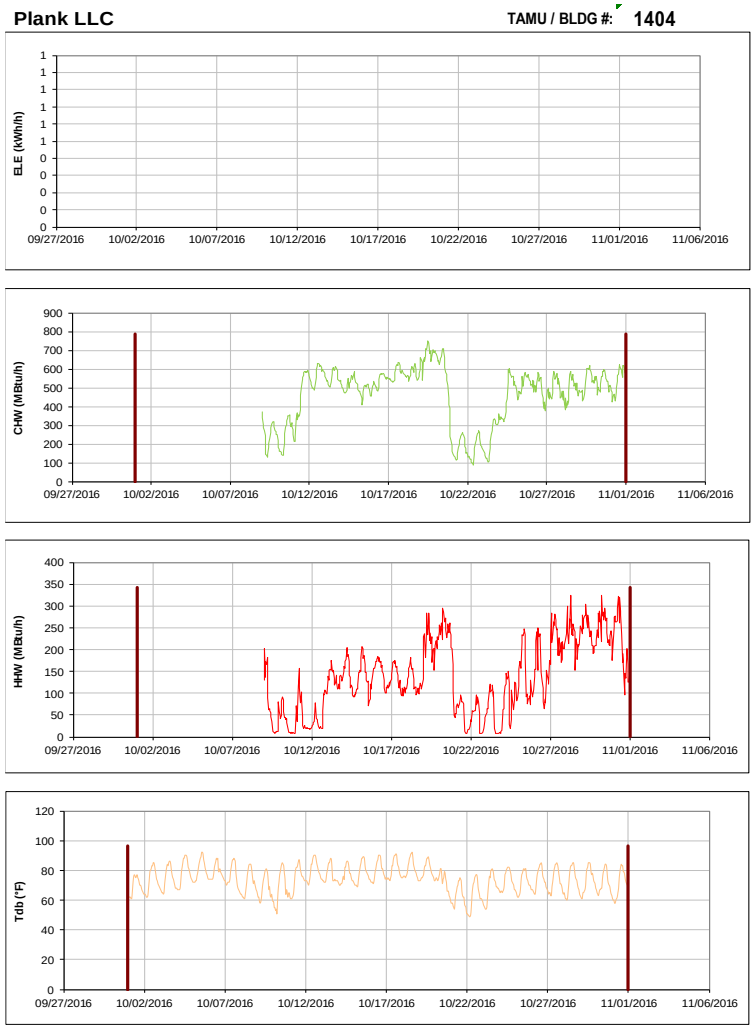


Figure III-32 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Plank LLC during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

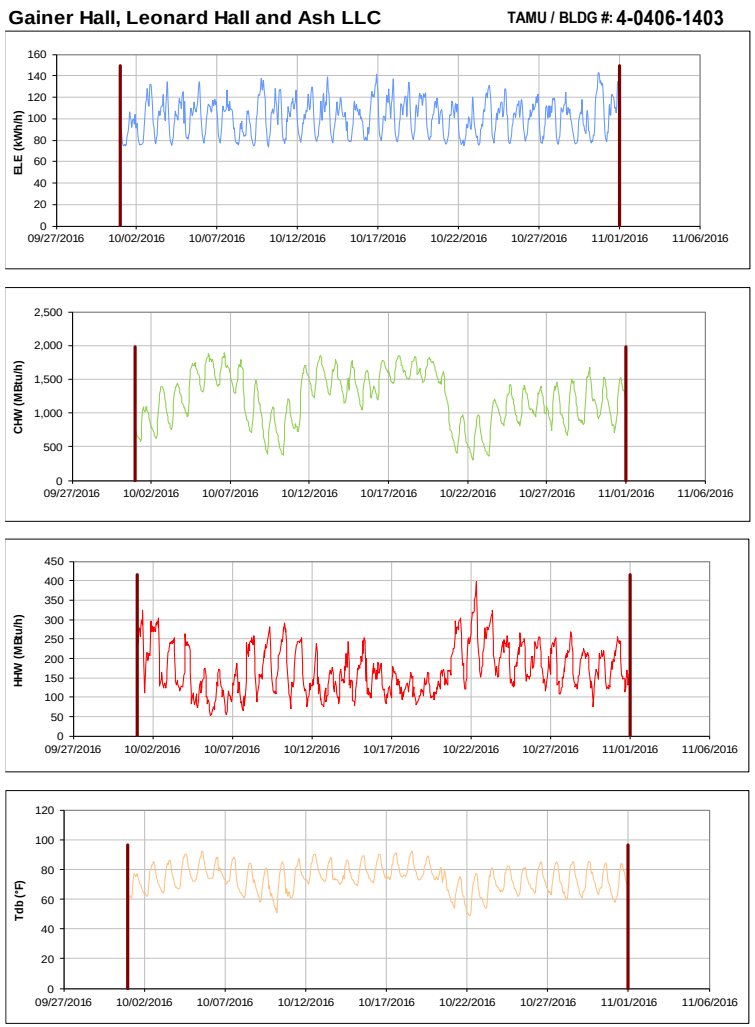


Figure III-33 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Gainer Hall, Leonard Hall and Ash LLC during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

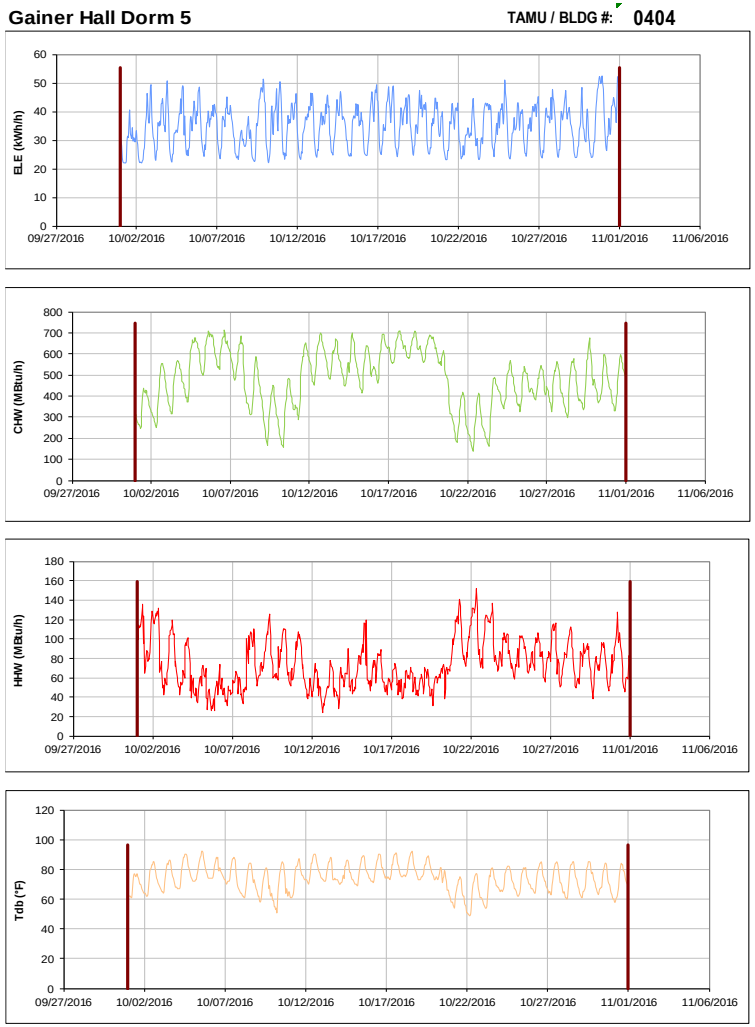


Figure III-34 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Gainer Hall Dorm 5 during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

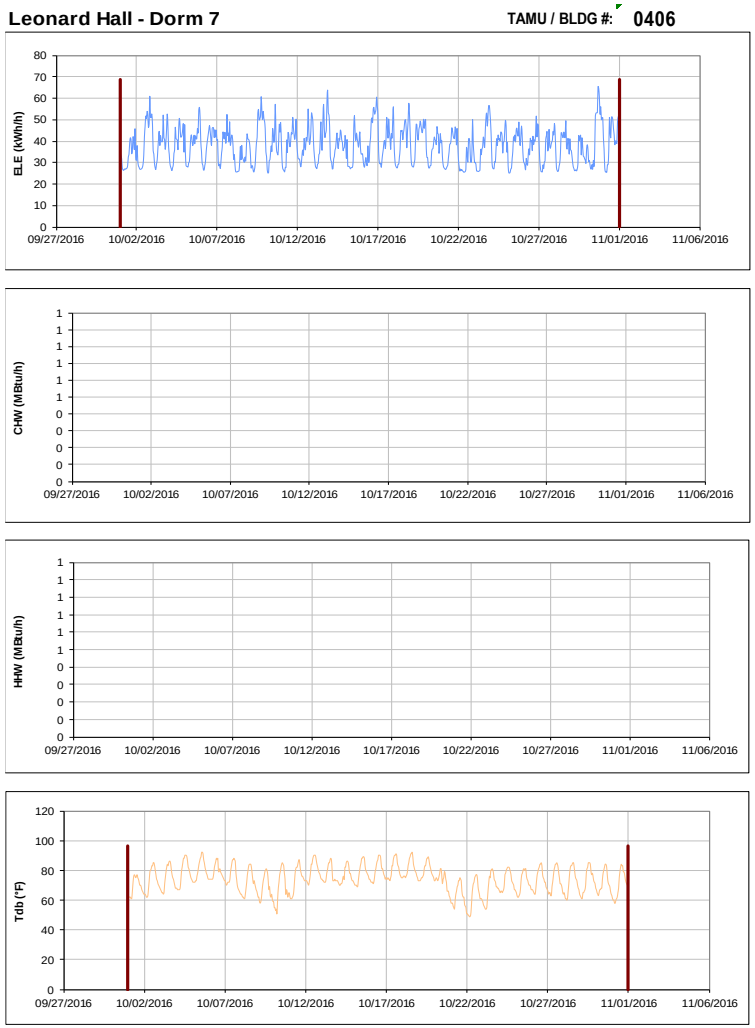


Figure III-35 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Leonard Hall - Dorm 7 during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-36 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for H. Grady Ash, Jr. '58 Leadership Learning Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

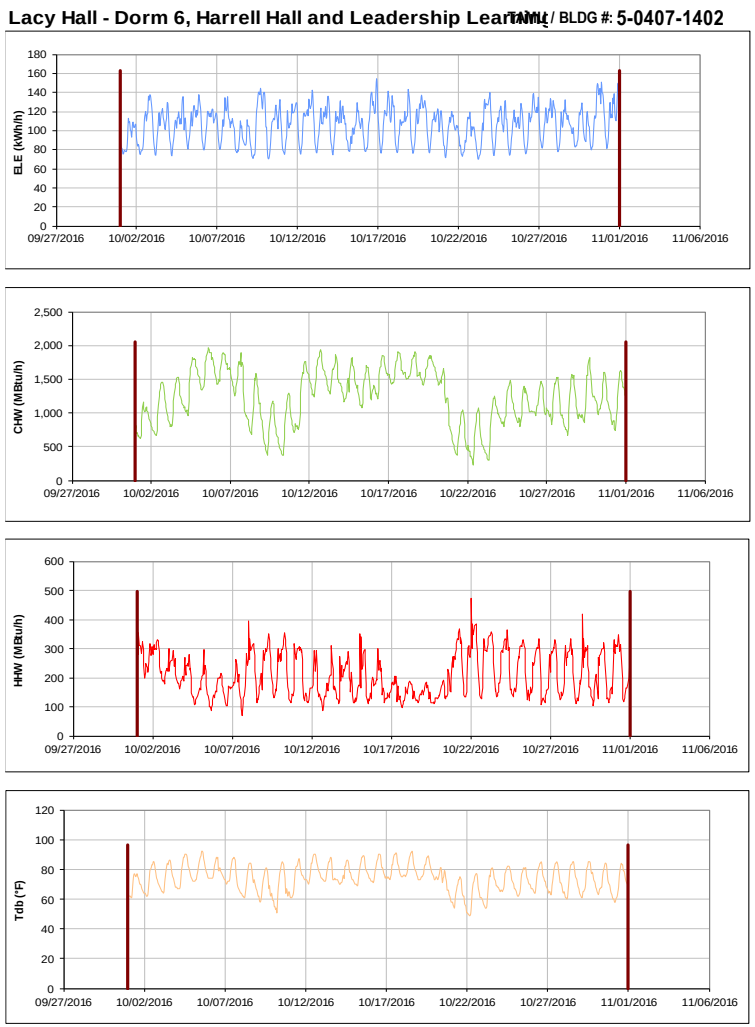


Figure III-37 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Lacy Hall - Dorm 6, Harrell Hall and Leadership Learning Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

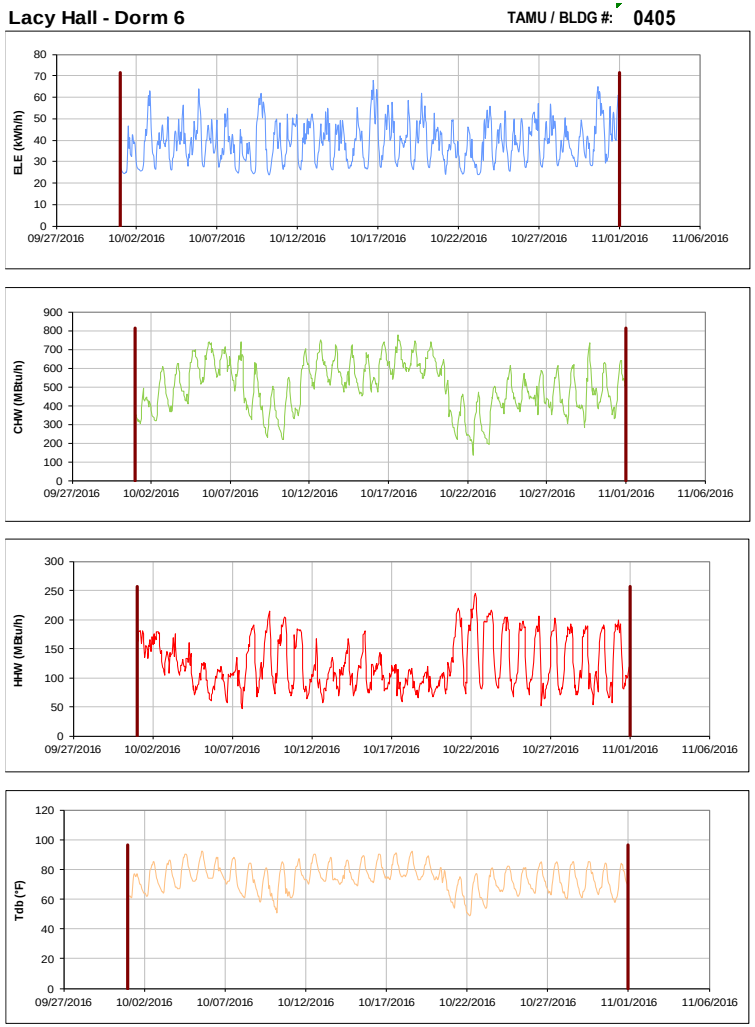


Figure III-38 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Lacy Hall - Dorm 6 during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

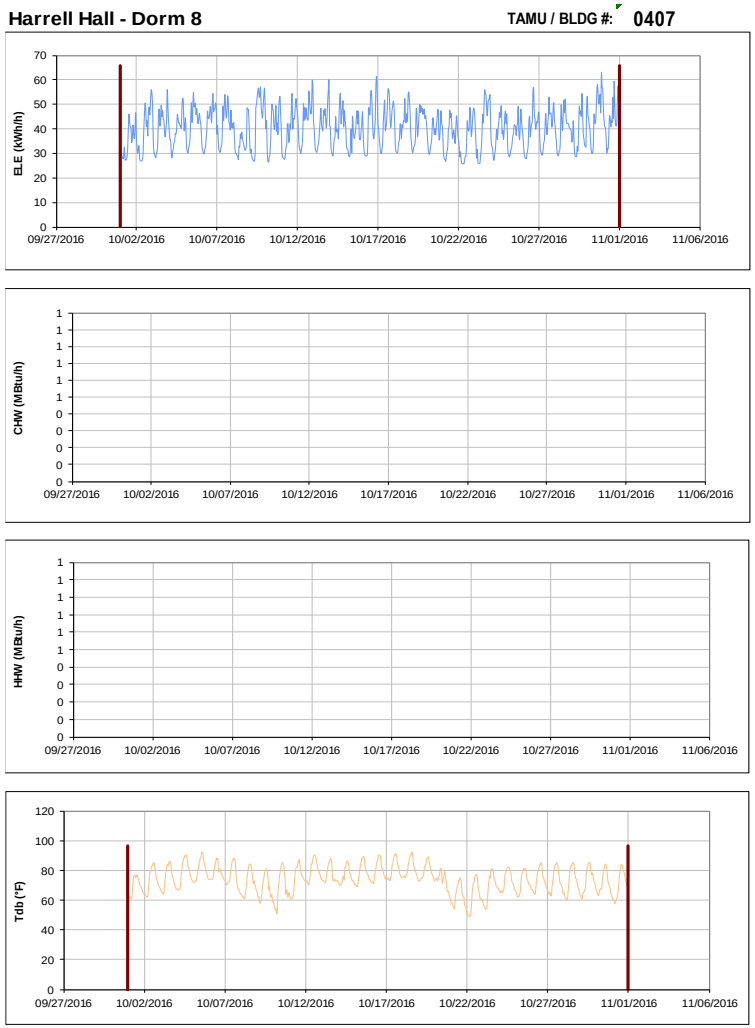


Figure III-39 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Harrell Hall - Dorm 8 during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-40 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Buzbee Leadership Learning Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

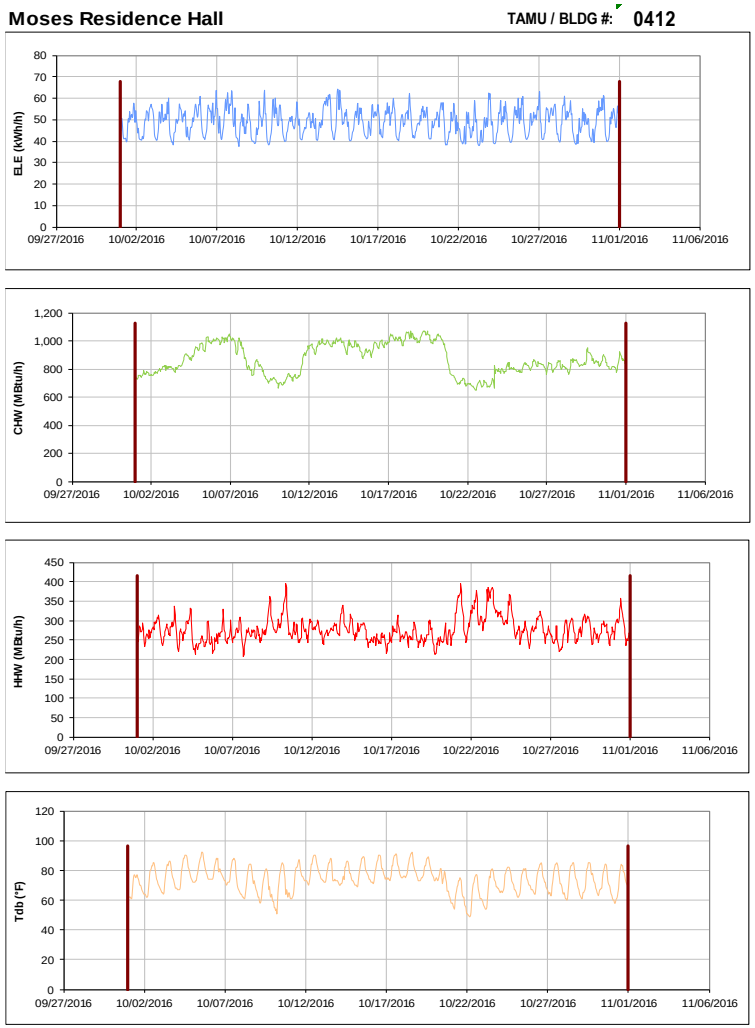


Figure III-41 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Moses Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

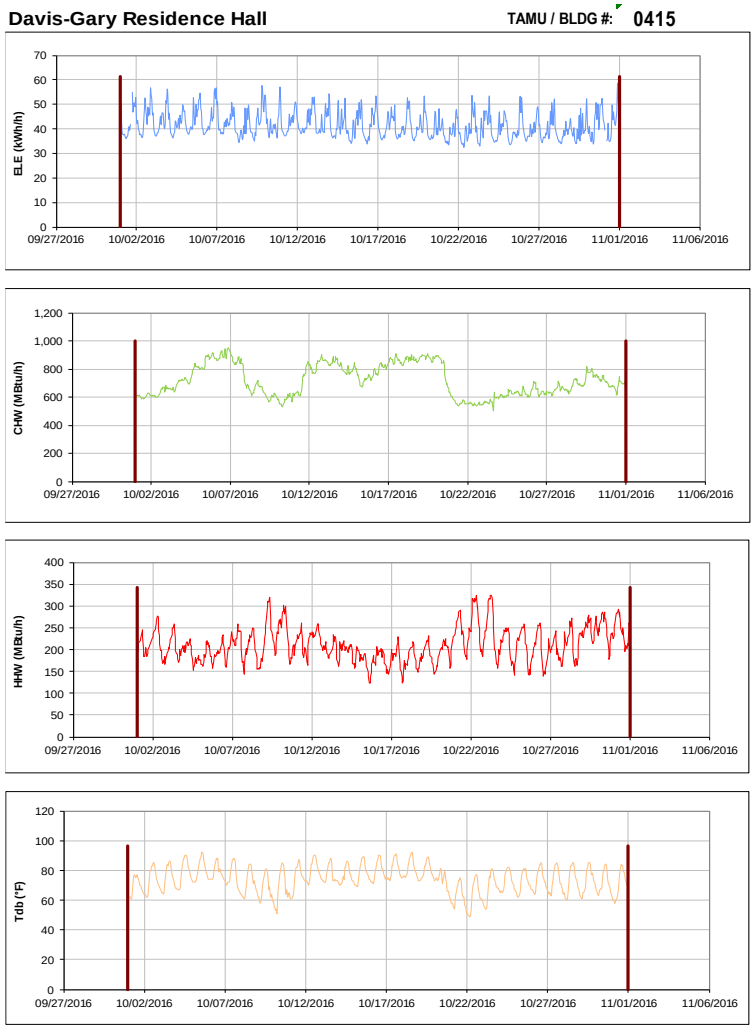


Figure III-42 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Davis-Gary Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

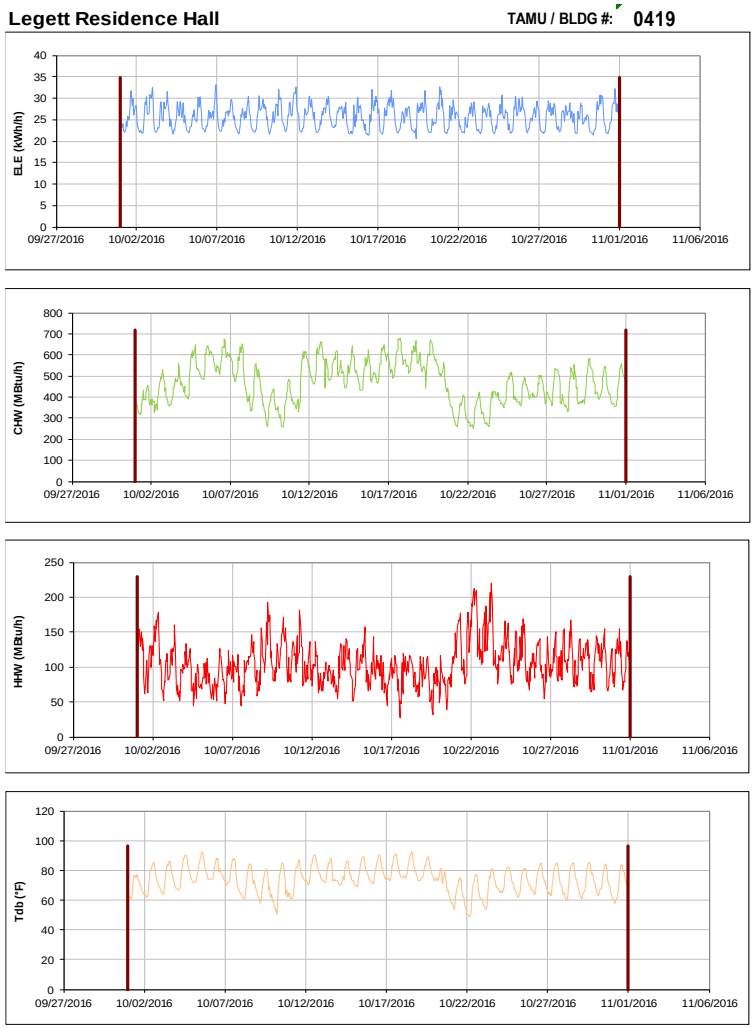


Figure III-43 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Legett Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

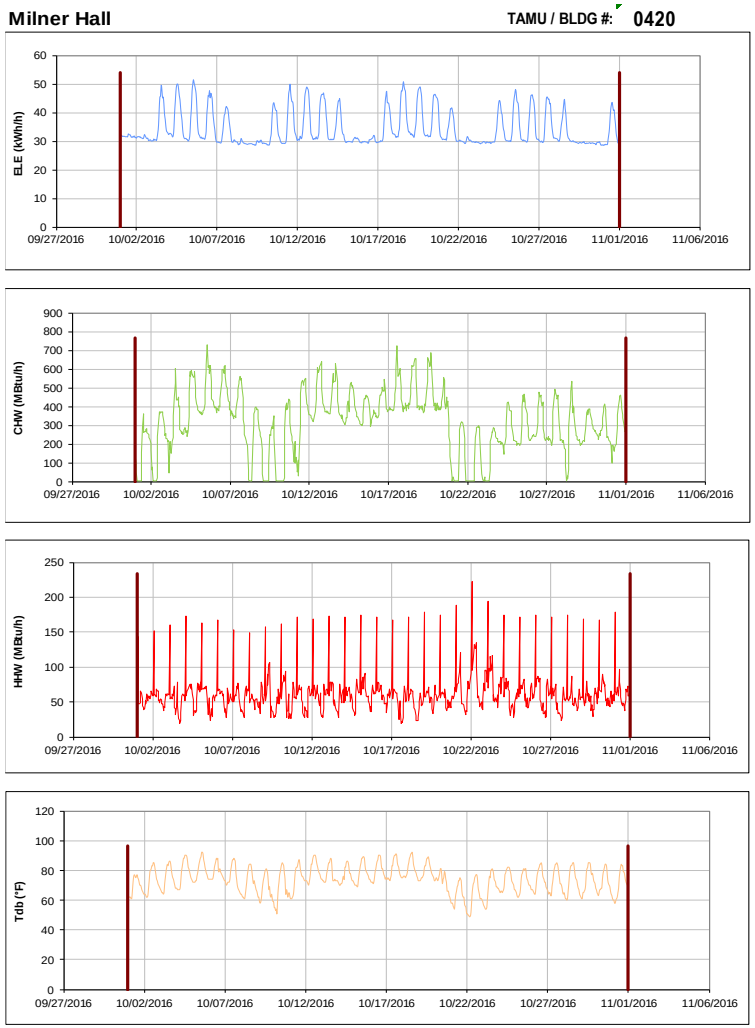


Figure III-44 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Milner Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

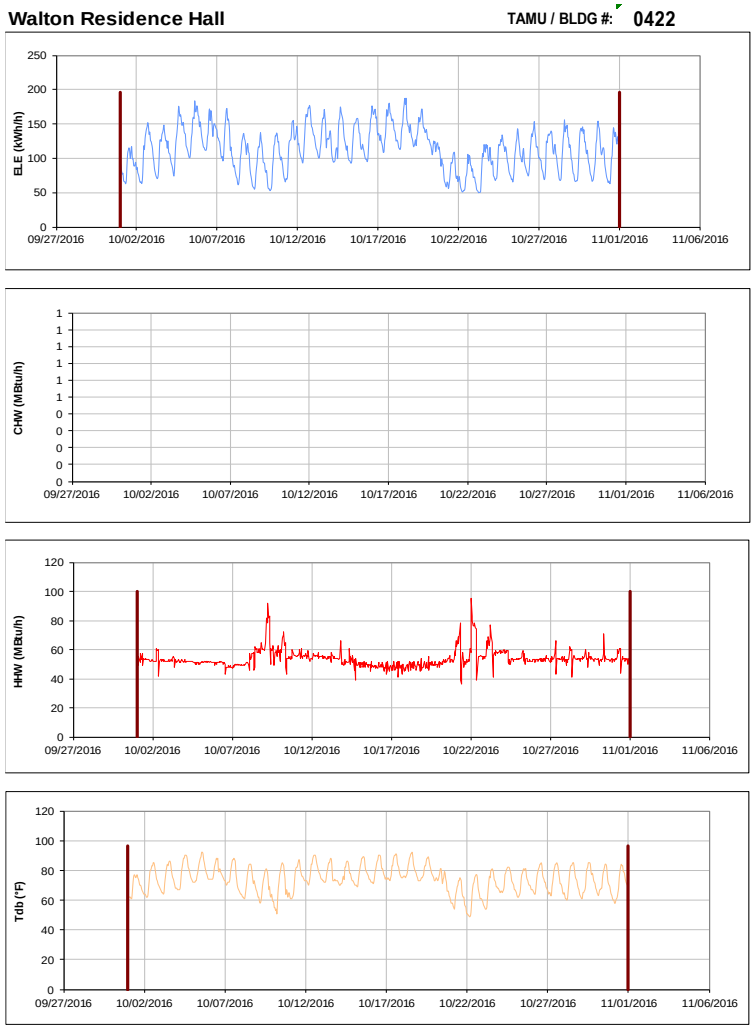


Figure III-45 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Walton Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-46 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Hotard Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

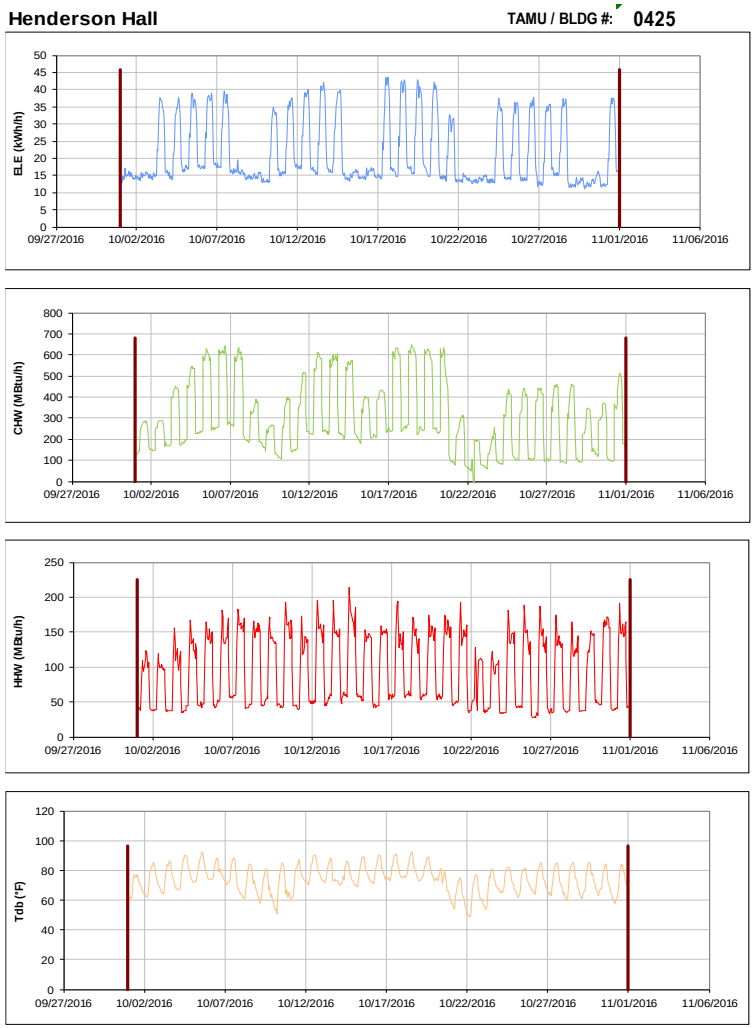


Figure III-47 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Henderson Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

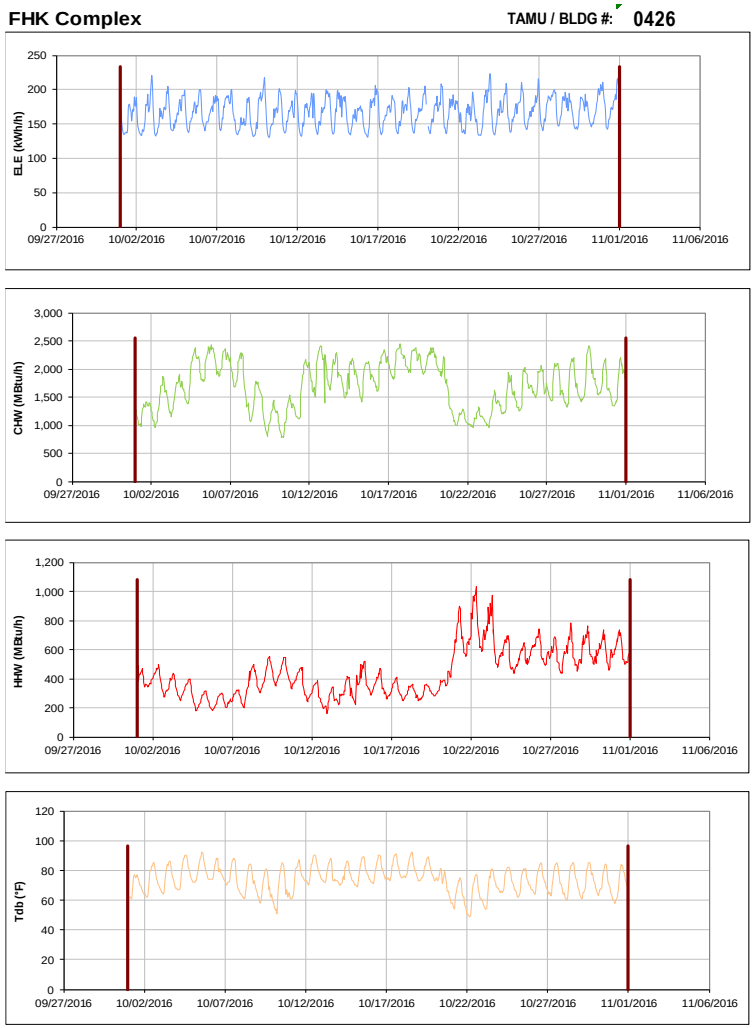


Figure III-48 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for FHK Complex during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

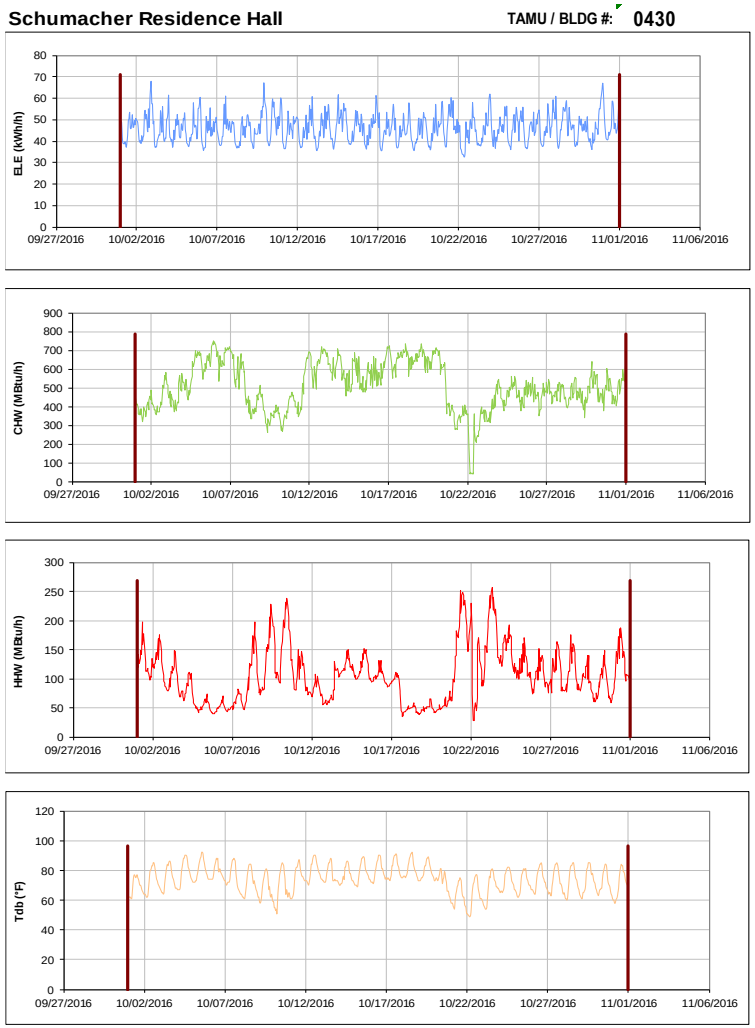


Figure III-49 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Schumacher Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

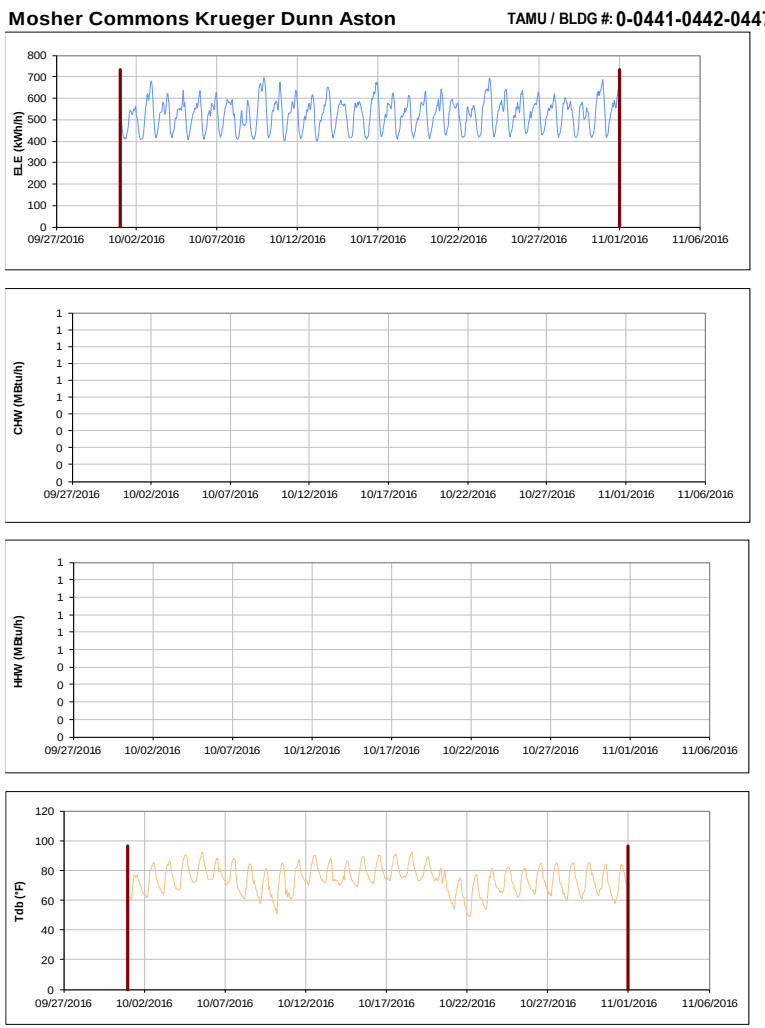


Figure III-50 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Mosher Commons Krueger Dunn Aston during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

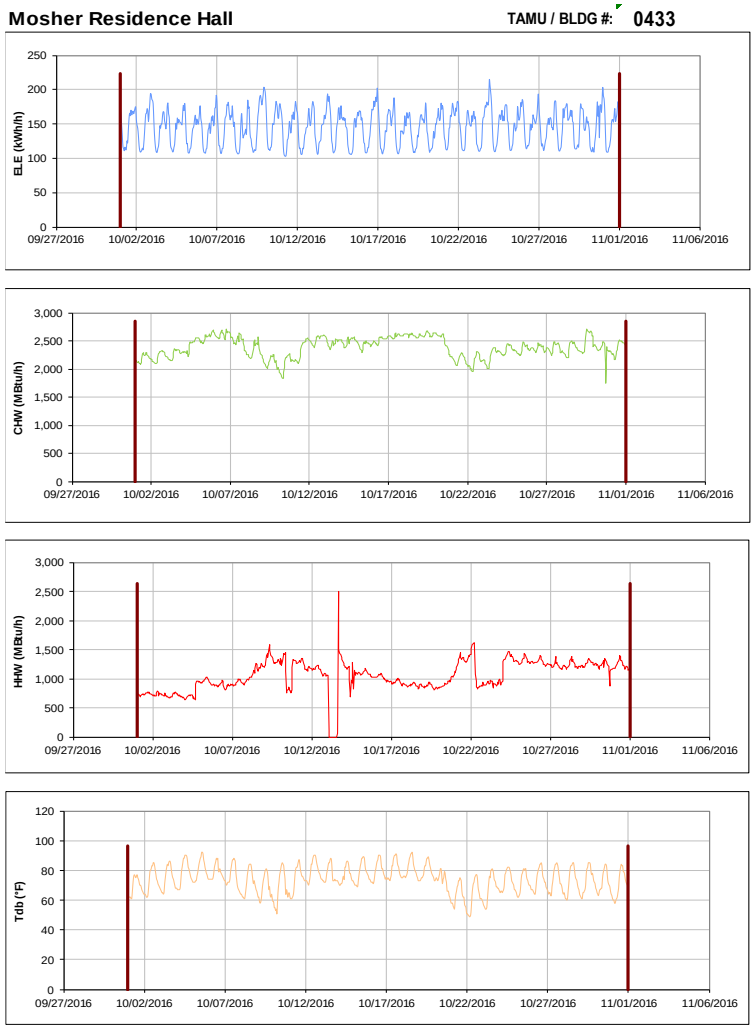


Figure III-51 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Mosher Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

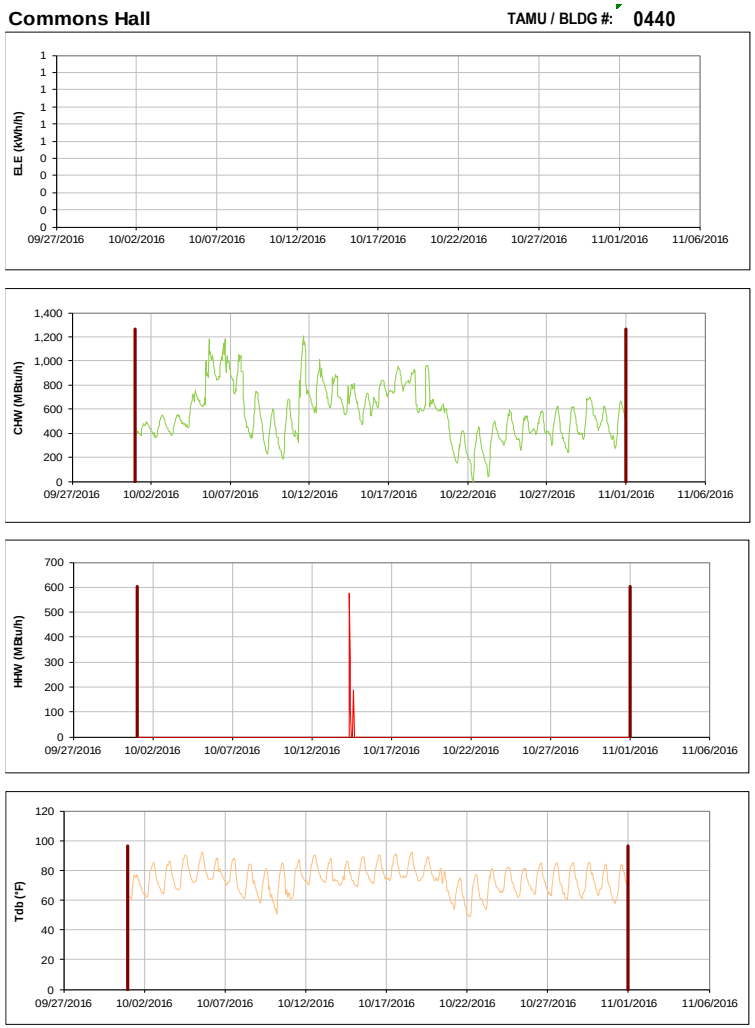


Figure III-52 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Commons Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

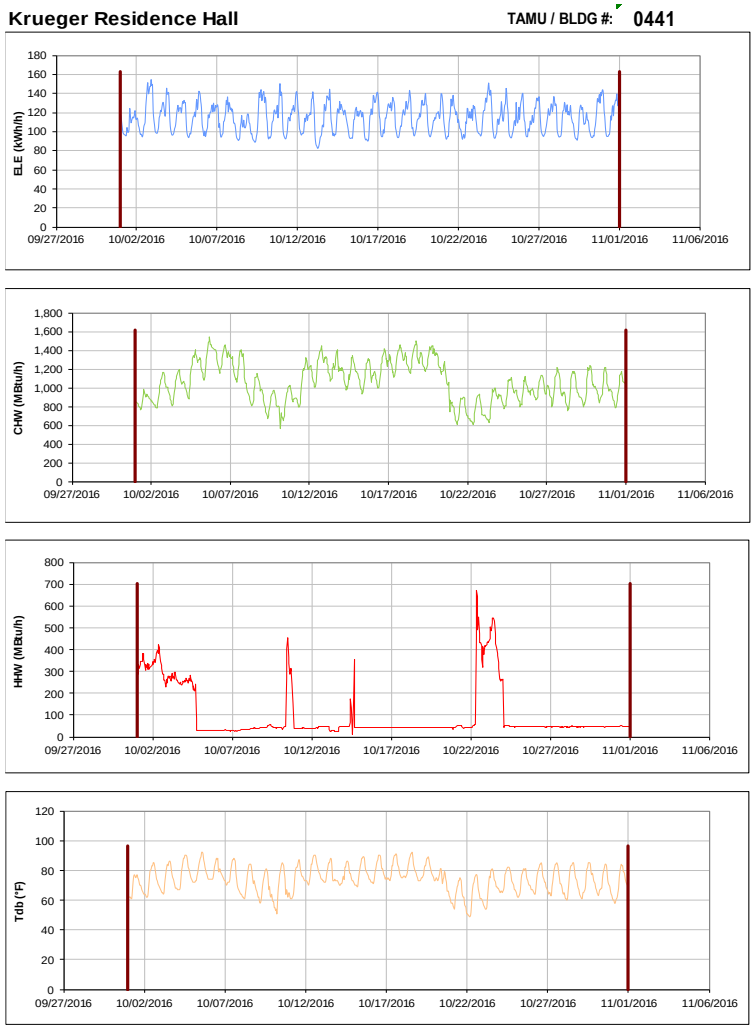


Figure III-53 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Krueger Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

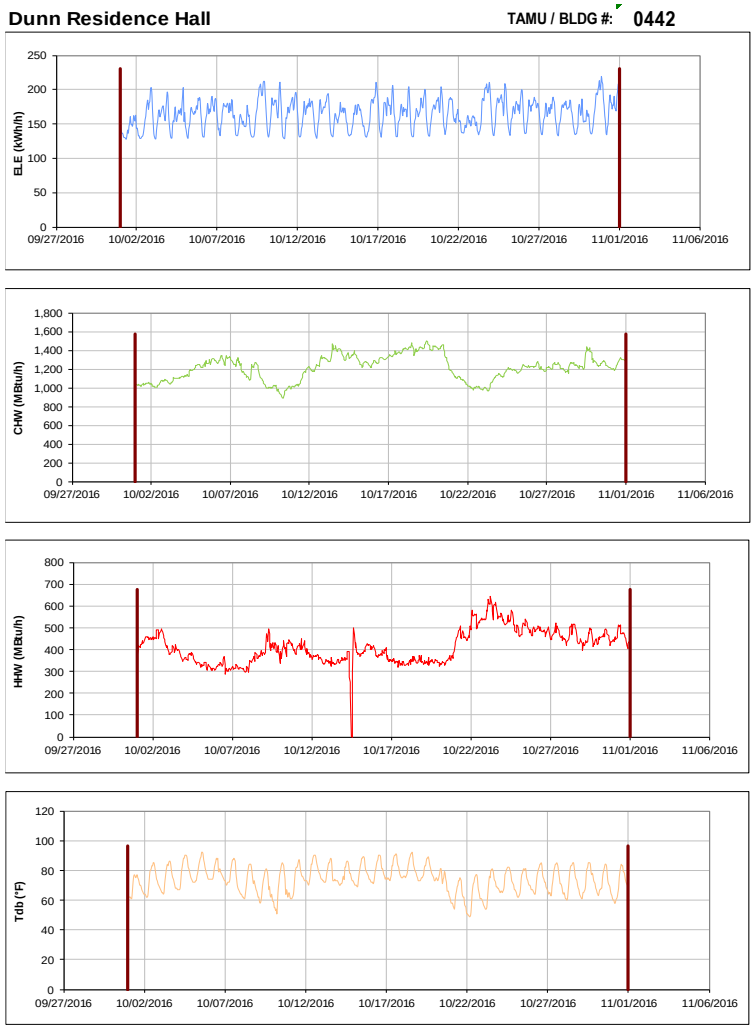


Figure III-54 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Dunn Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

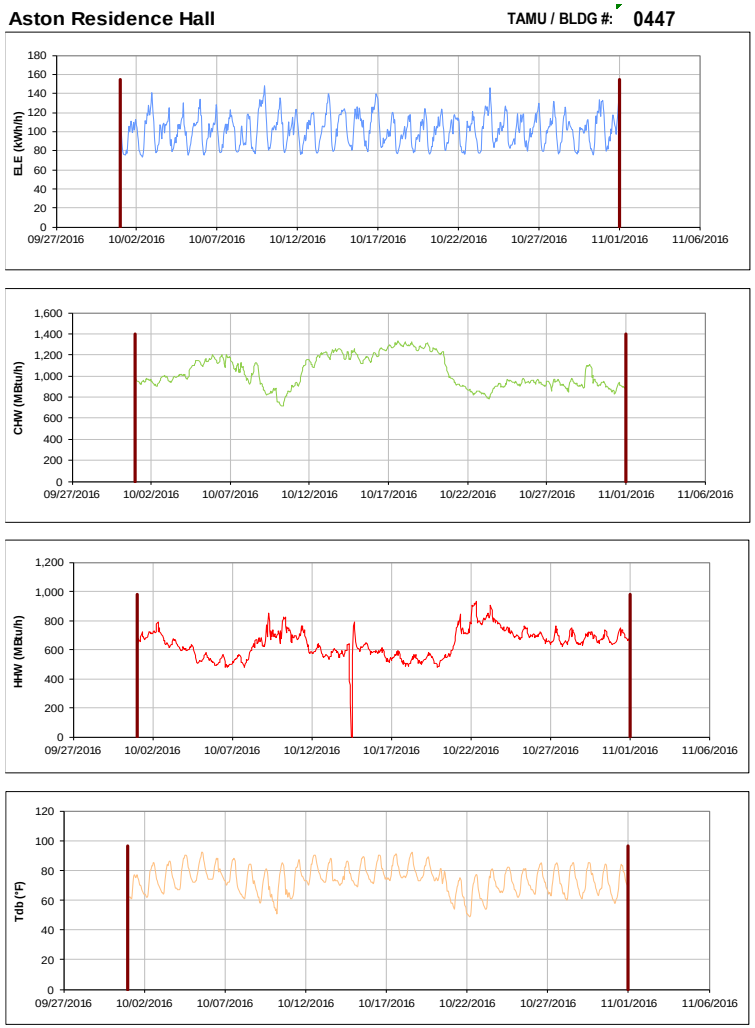


Figure III-55 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Aston Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

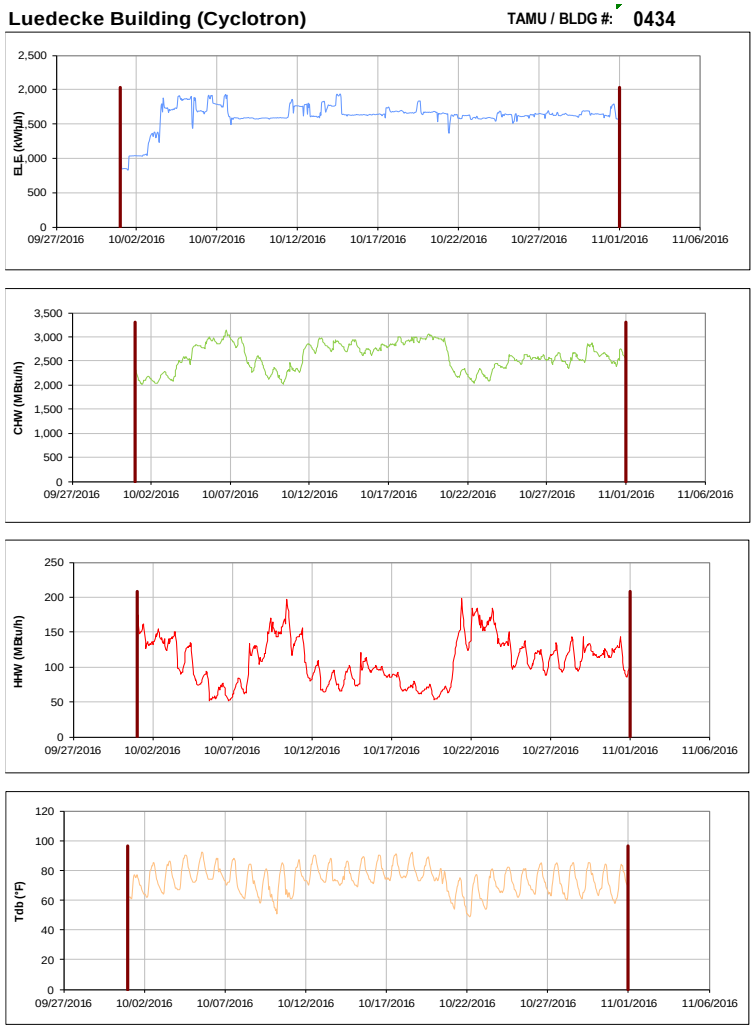


Figure III-56 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Luedecke Building (Cyclotron) during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

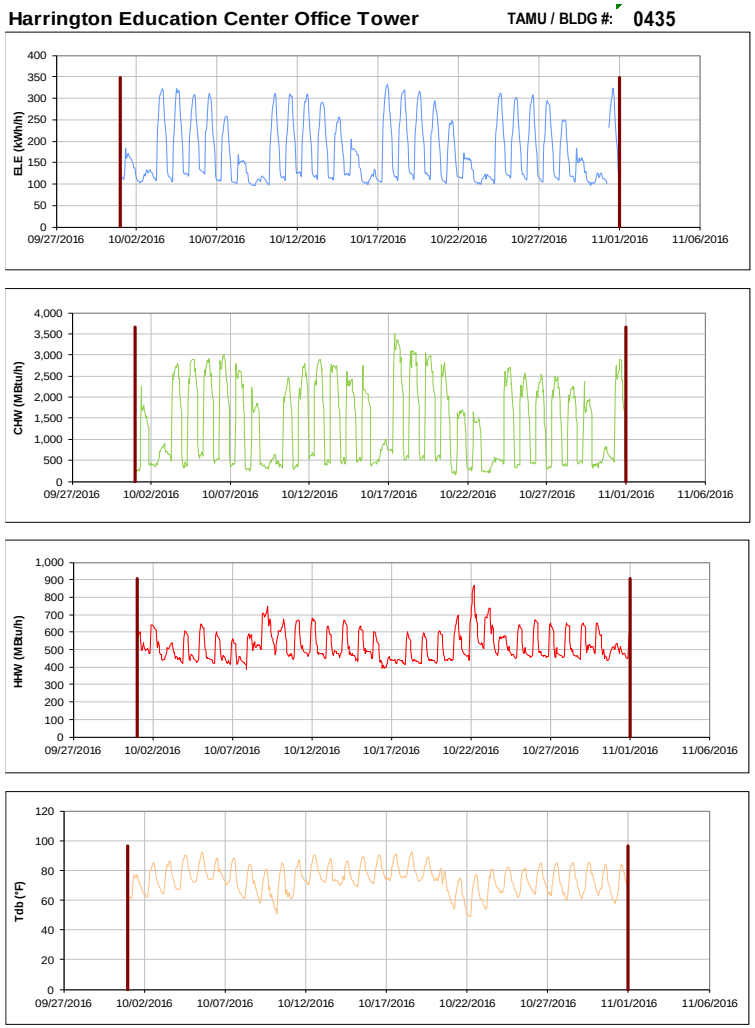


Figure III-57 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Harrington Education Center Office Tower during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-58 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Reed-McDonald and Engineering Innovation Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

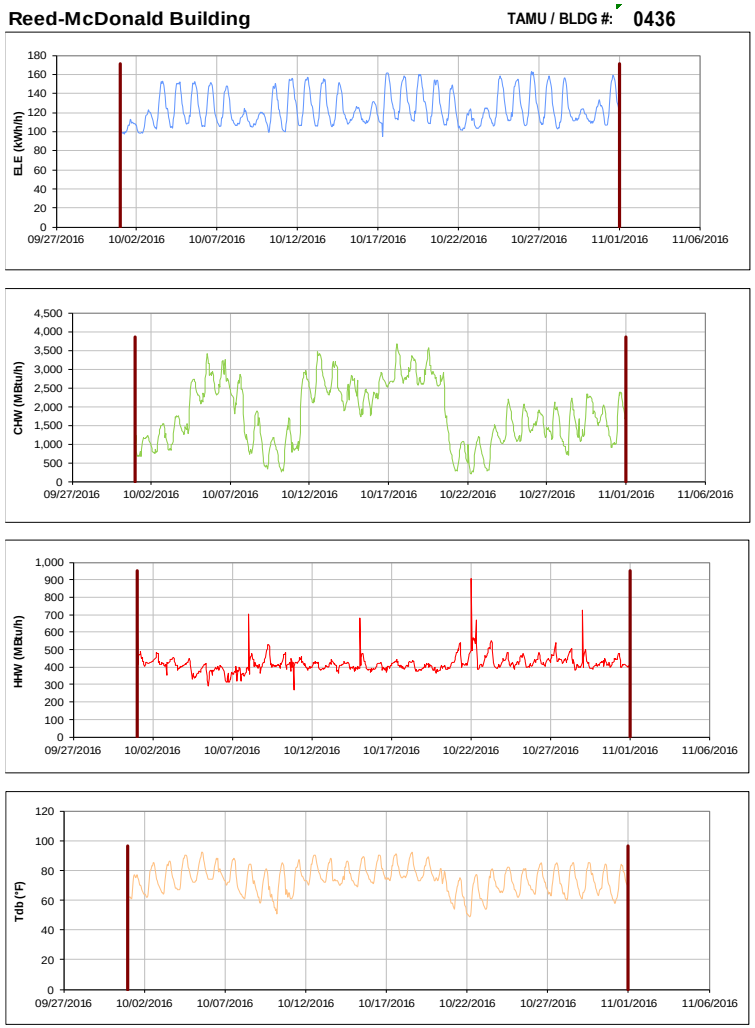


Figure III-59 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Reed-McDonald Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

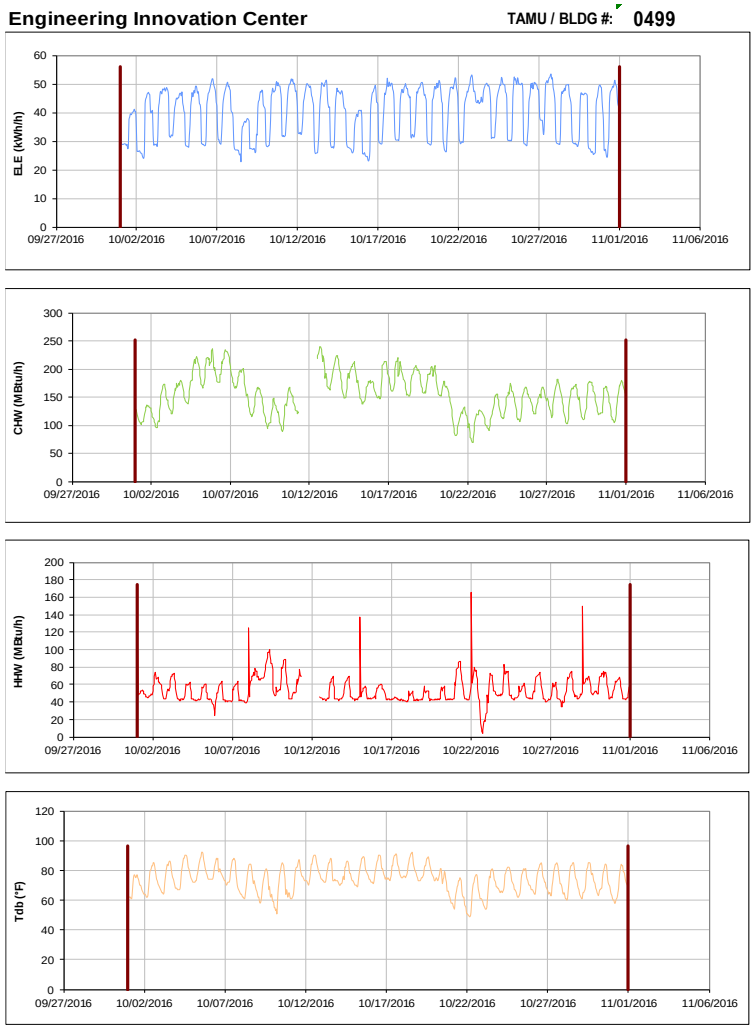


Figure III-60 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Engineering Innovation Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

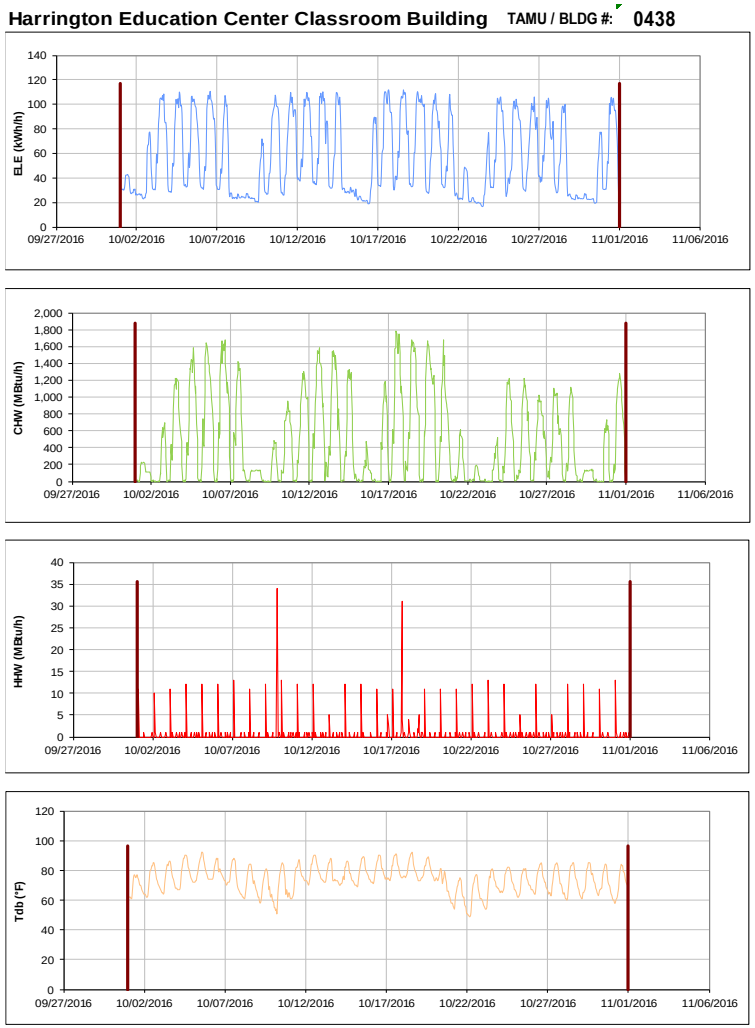


Figure III-61 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Harrington Education Center Classroom Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-62 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Oceanography & Meteorology Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

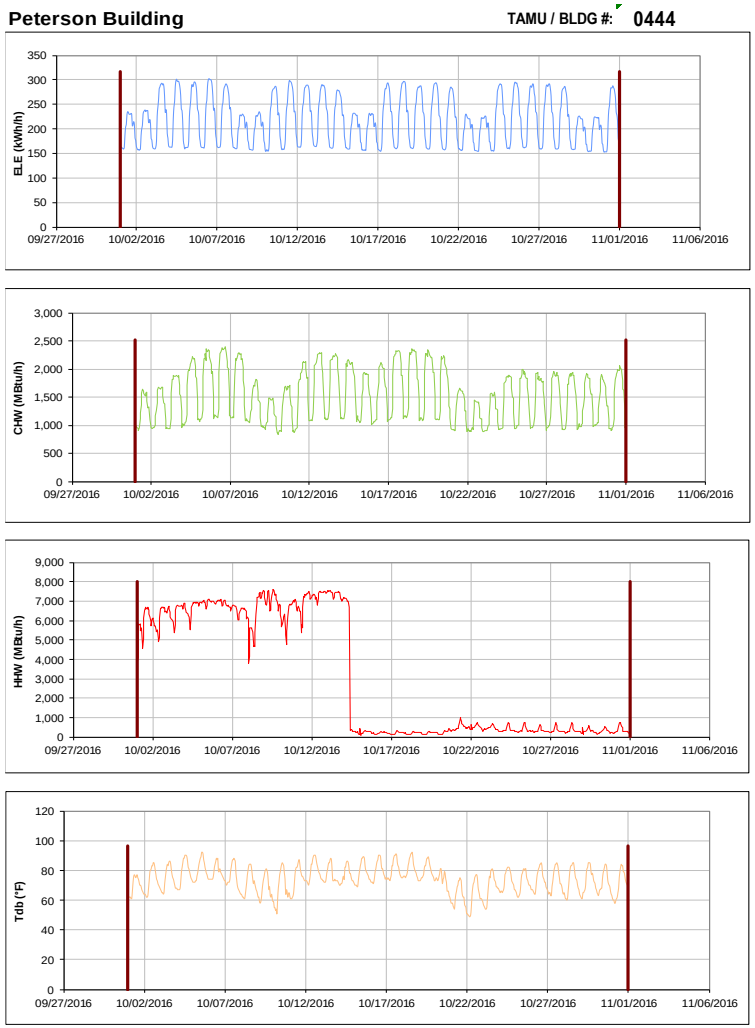


Figure III-63 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Peterson Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

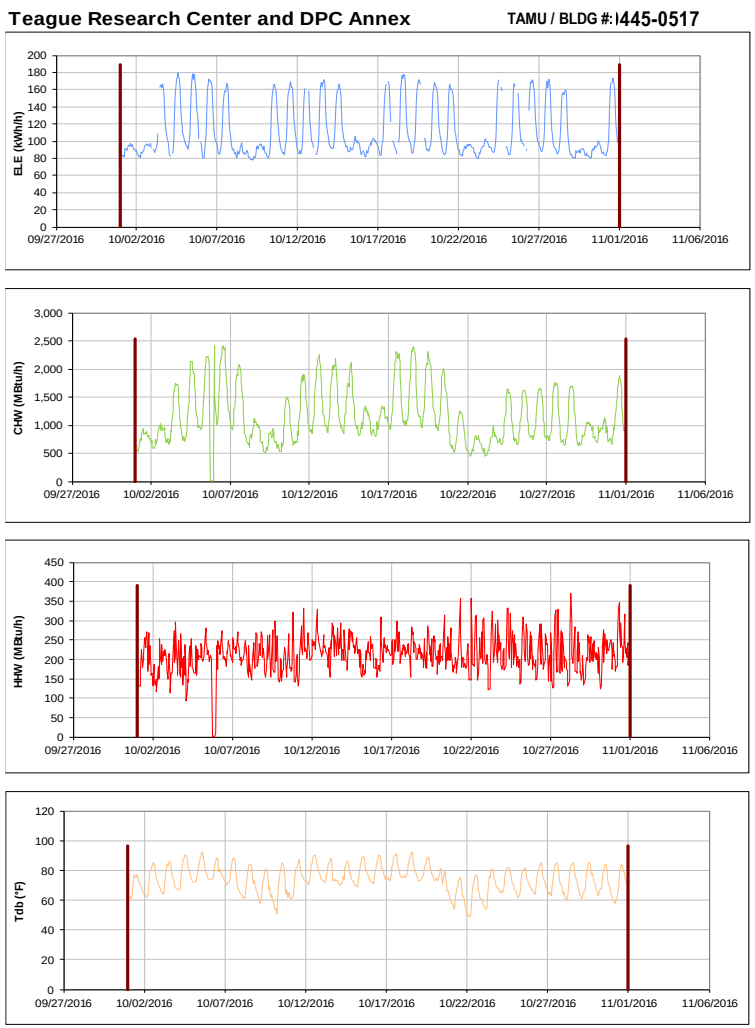


Figure III-64 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Teague Research Center and DPC Annex during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

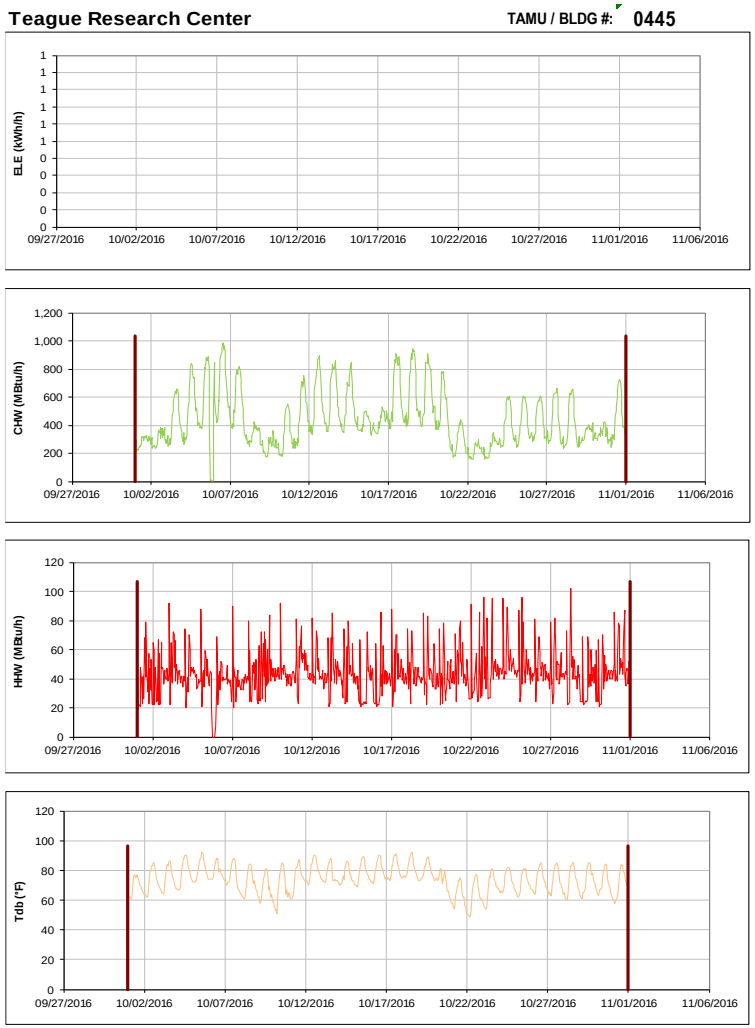


Figure III-65 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Teague Research Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

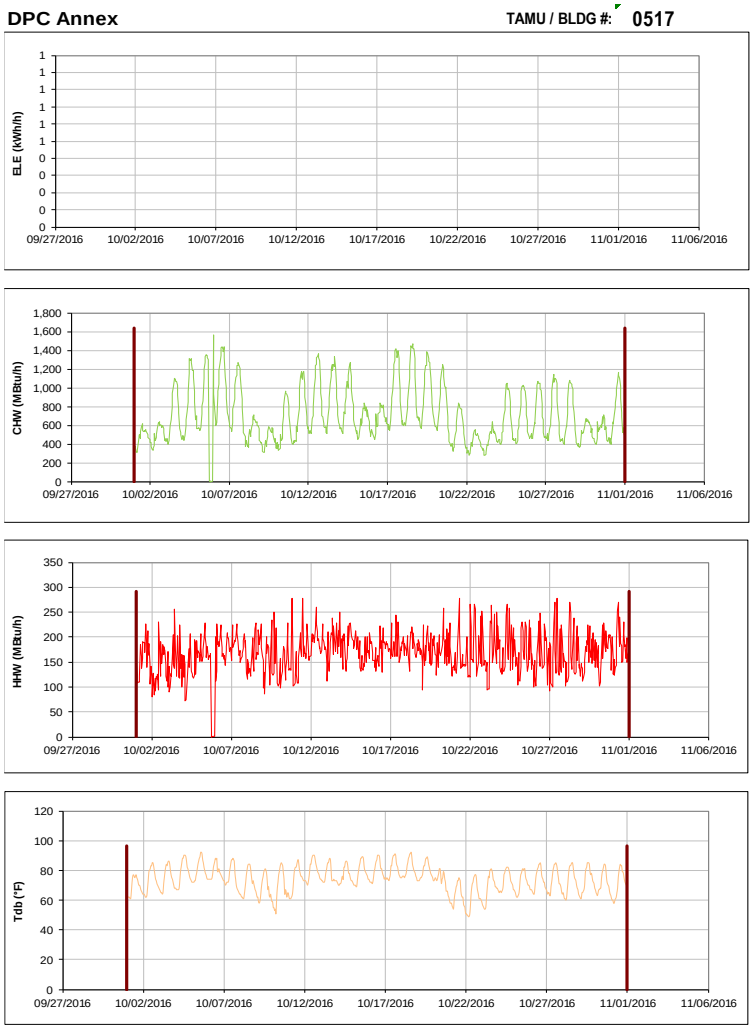


Figure III-66 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for DPC Annex during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

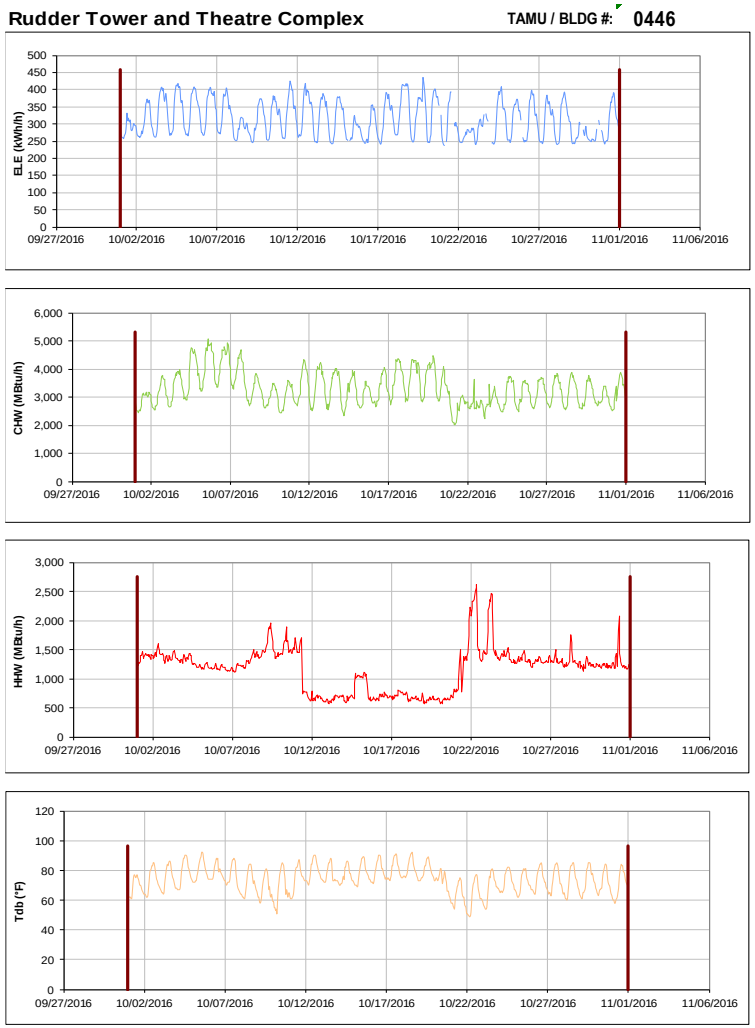


Figure III-67 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Rudder Tower and Theatre Complex during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

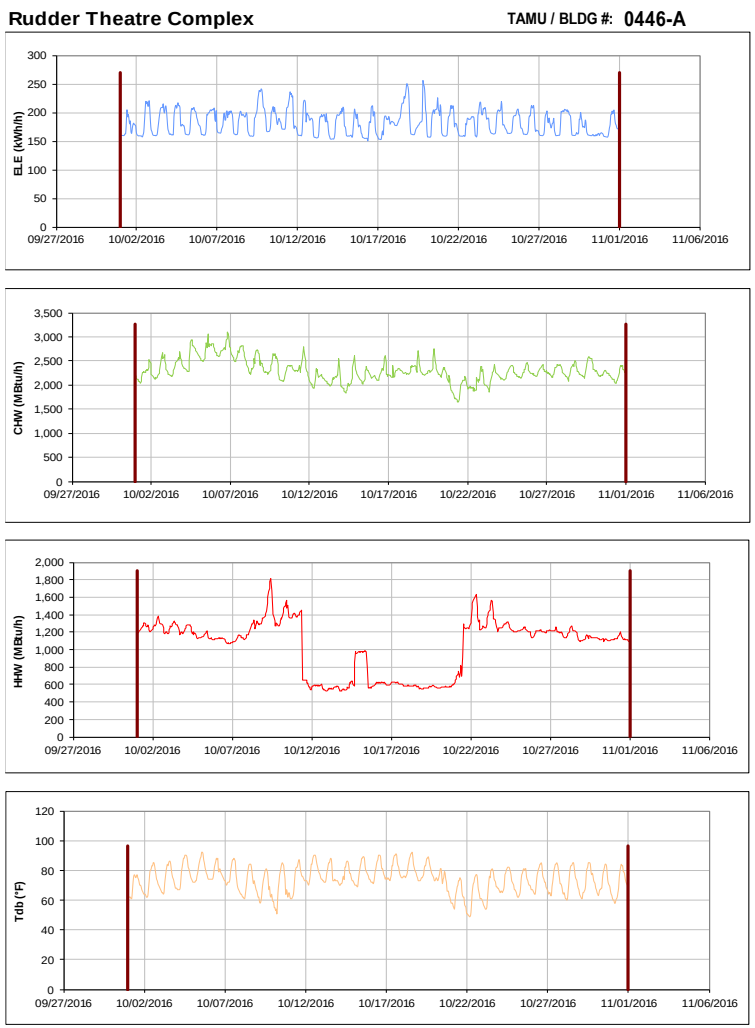


Figure III-68 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Rudder Theatre Complex during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

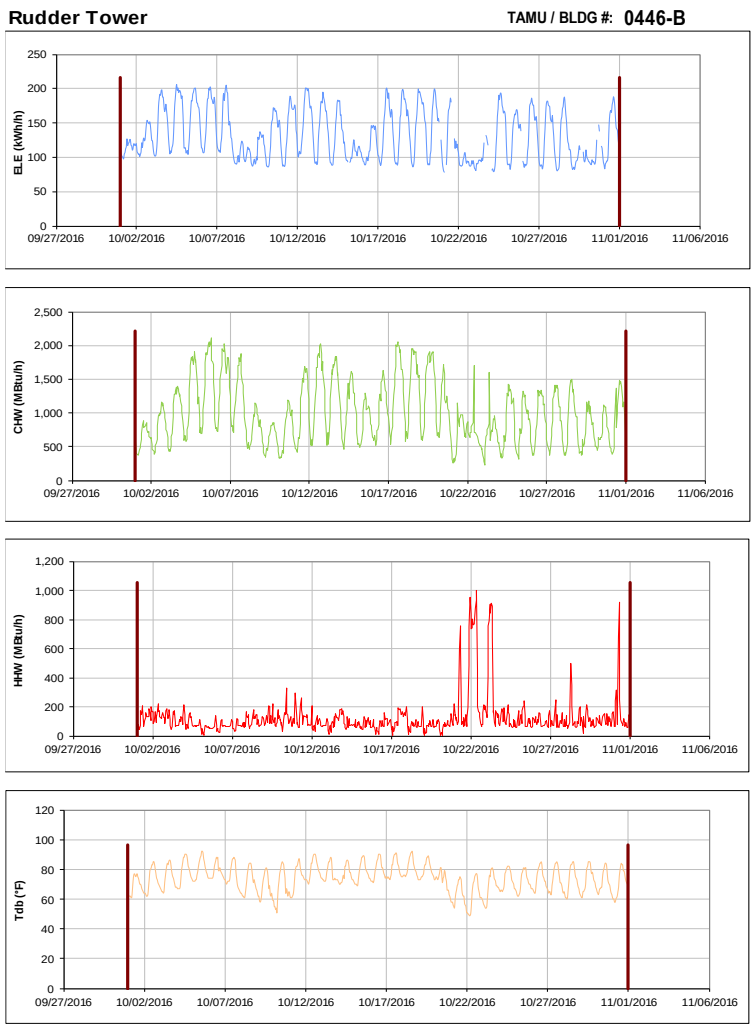


Figure III-69 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Rudder Tower during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

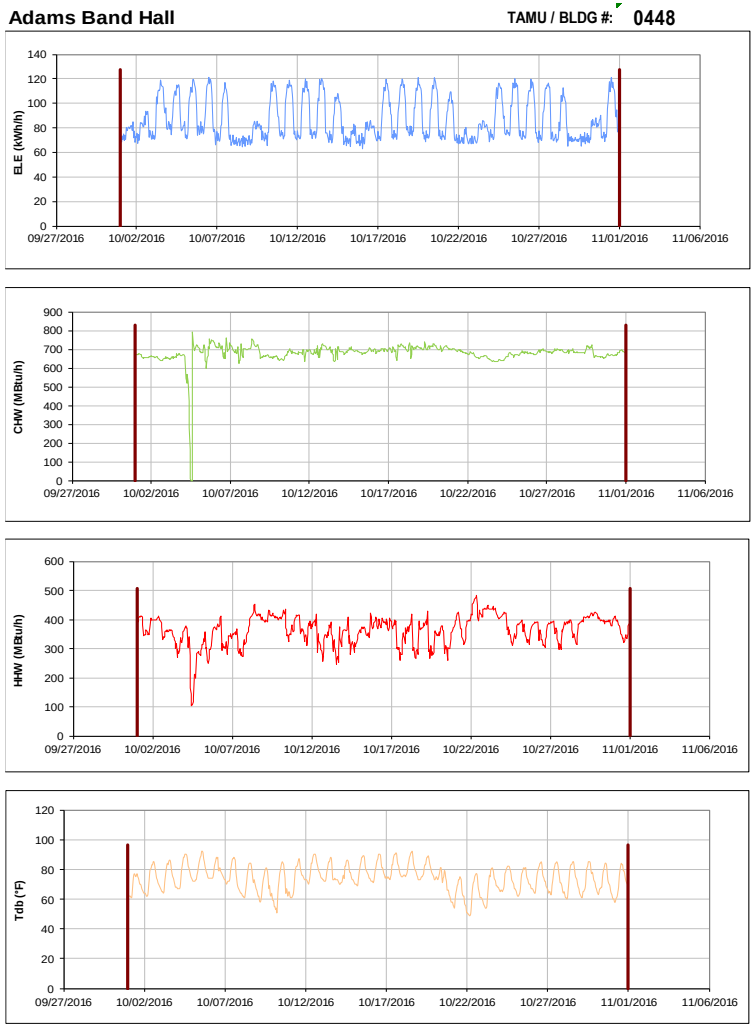


Figure III-70 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Adams Band Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

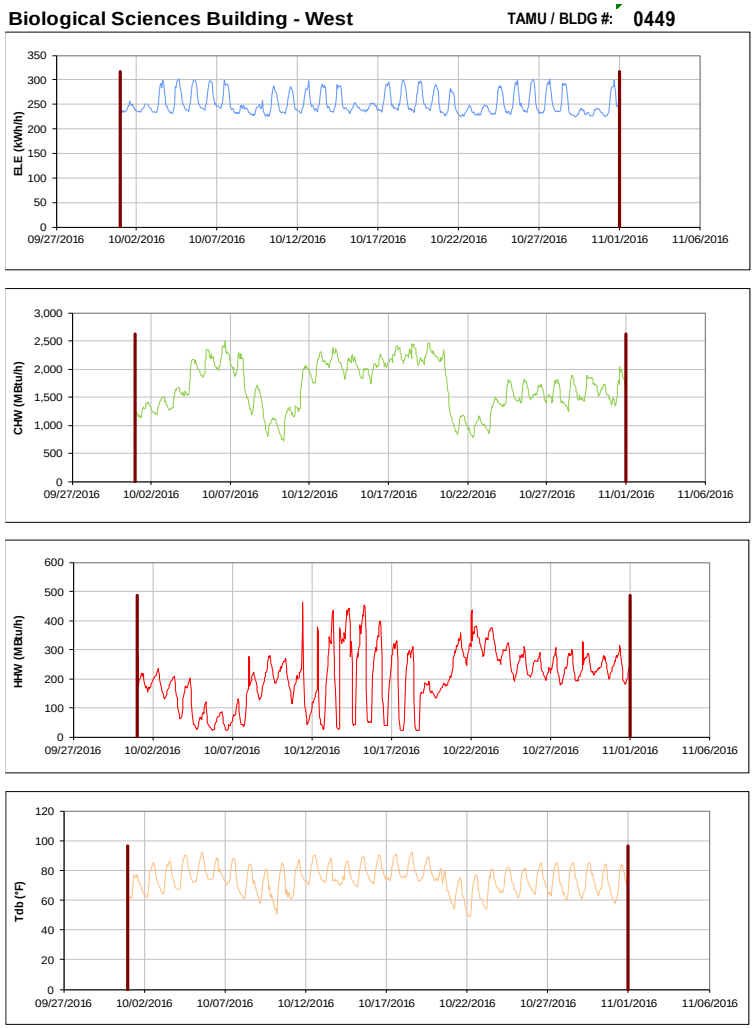


Figure III-71 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Biological Sciences Building - West during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

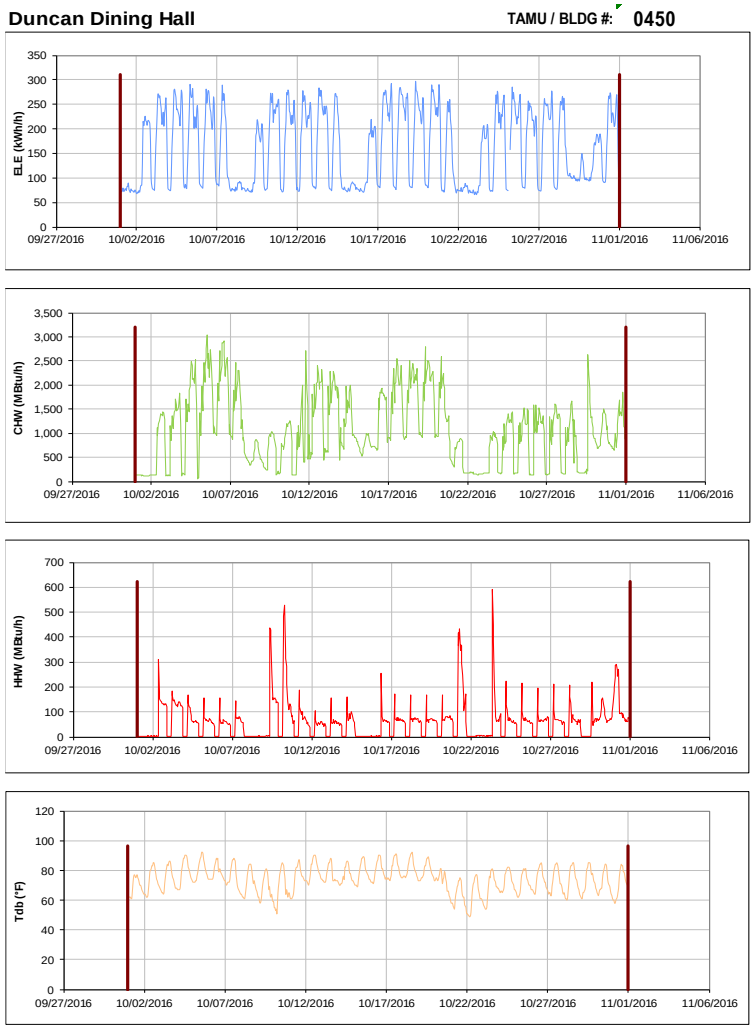


Figure III-72 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Duncan Dining Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

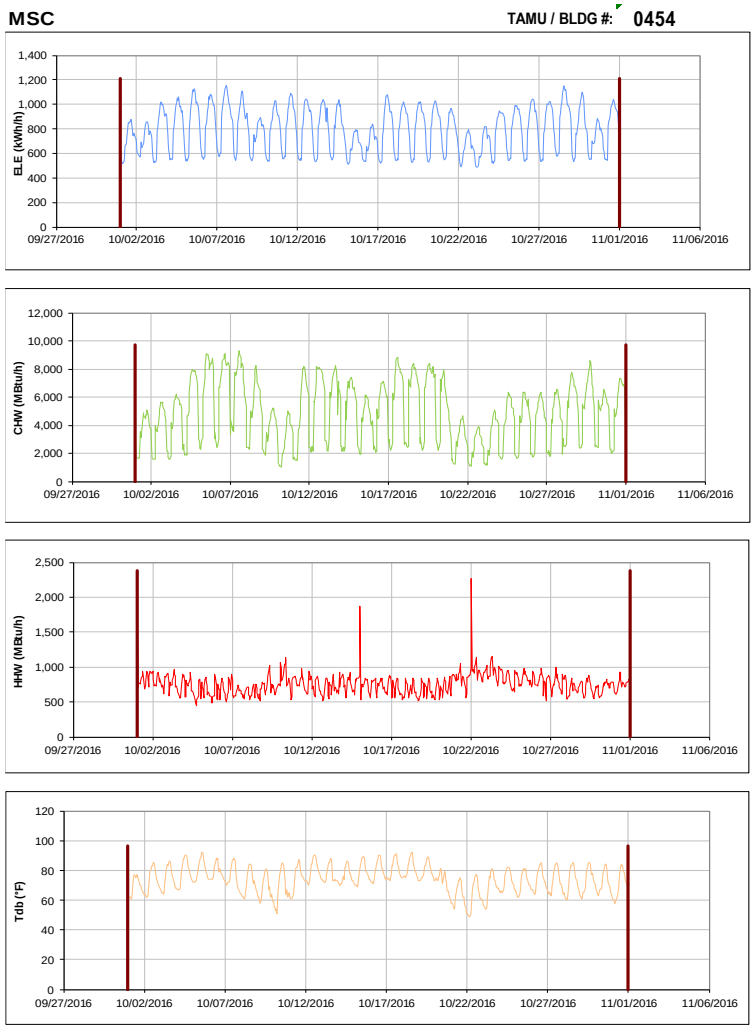


Figure III-73 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for MSC during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

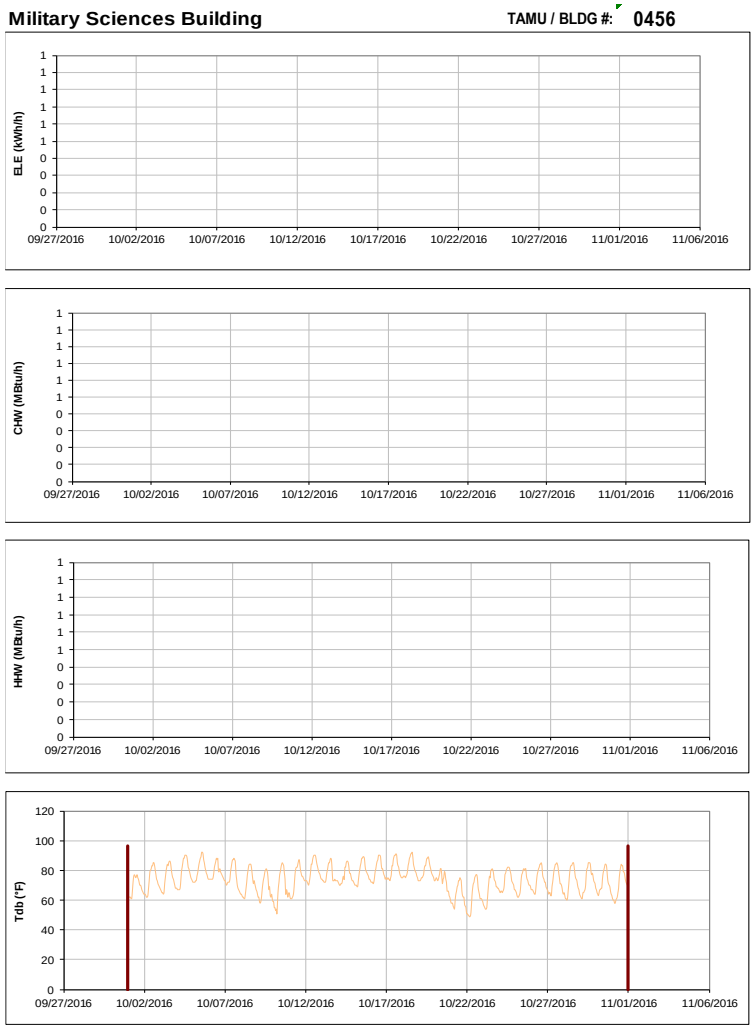


Figure III-74 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Military Sciences Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

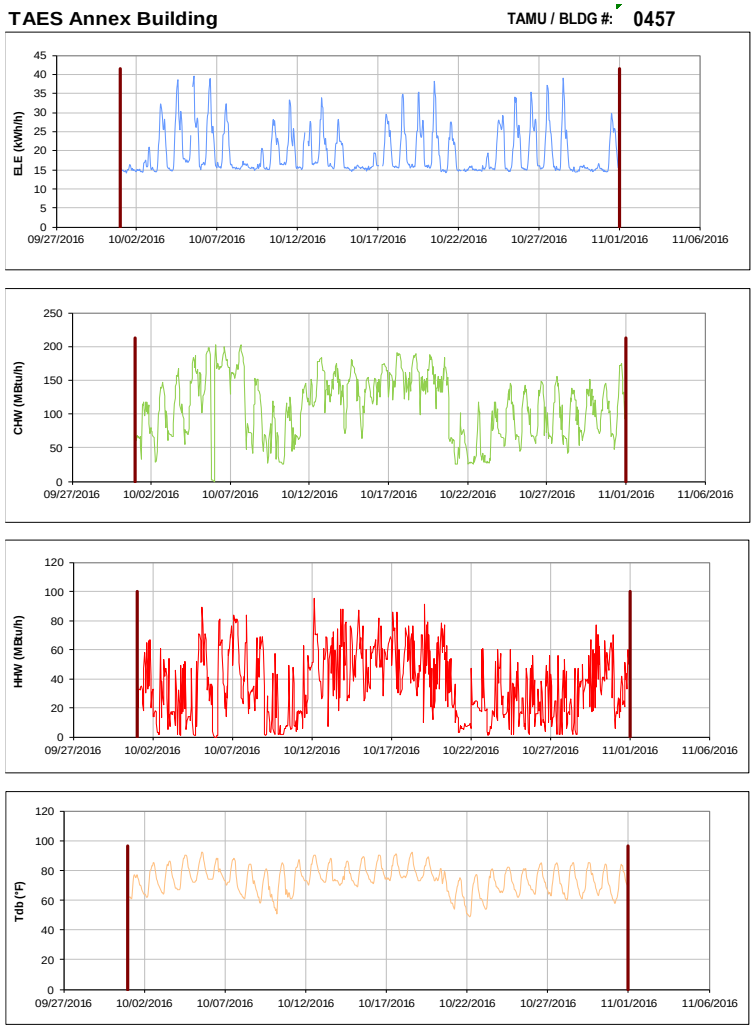


Figure III-75 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for TAES Annex Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

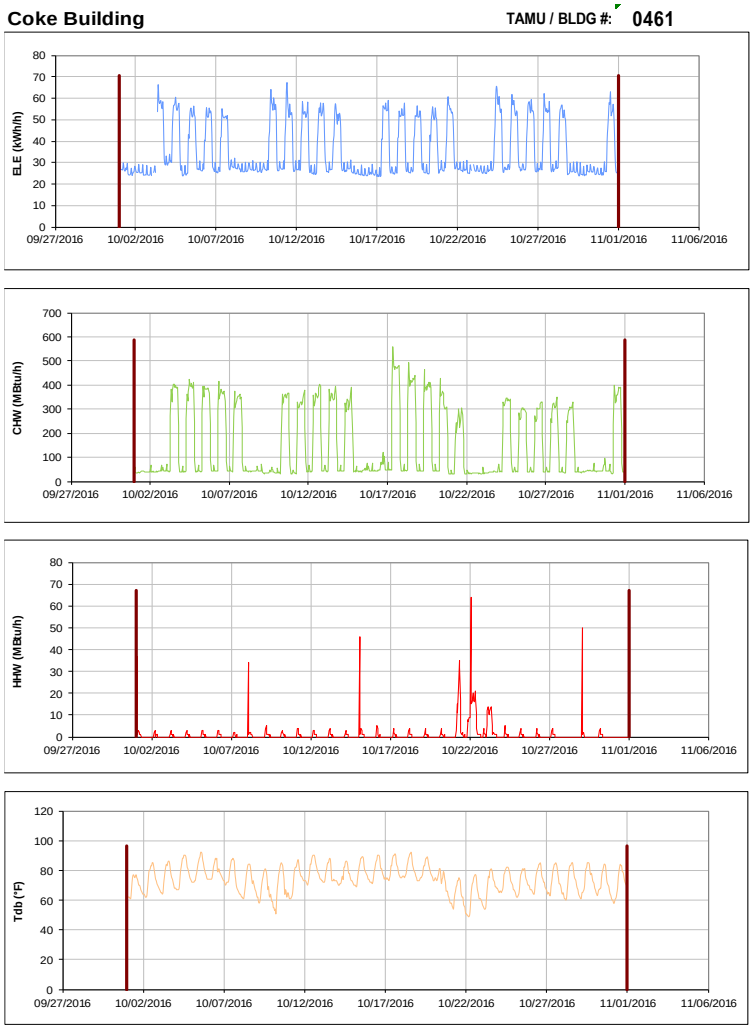


Figure III-76 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Coke Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

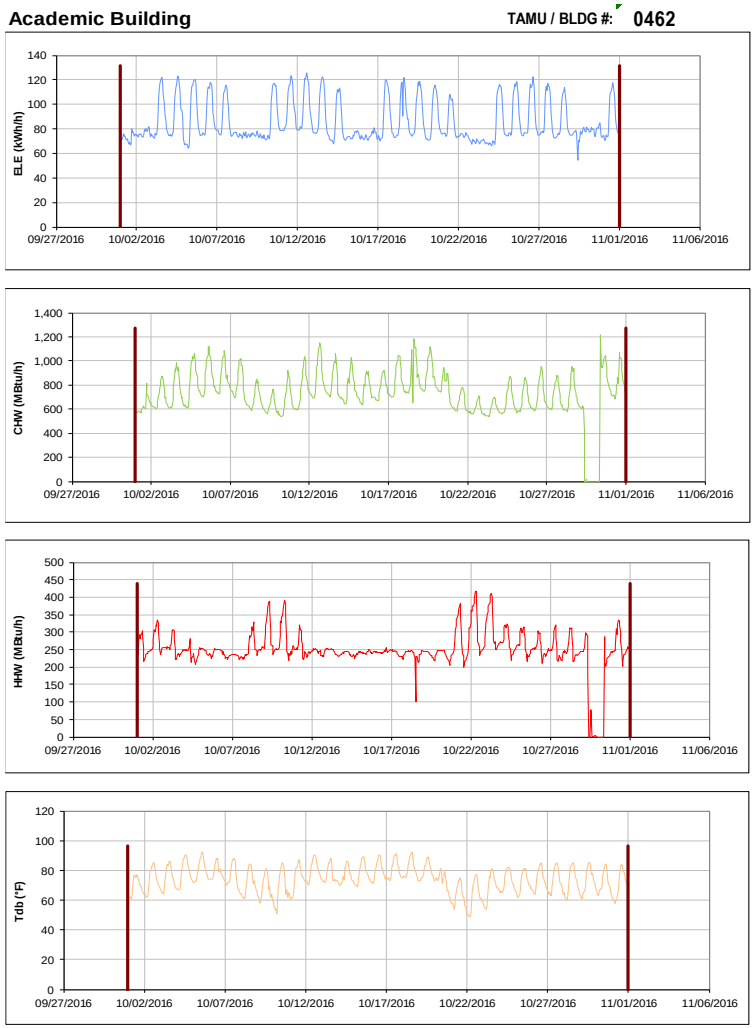


Figure III-77 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Academic Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

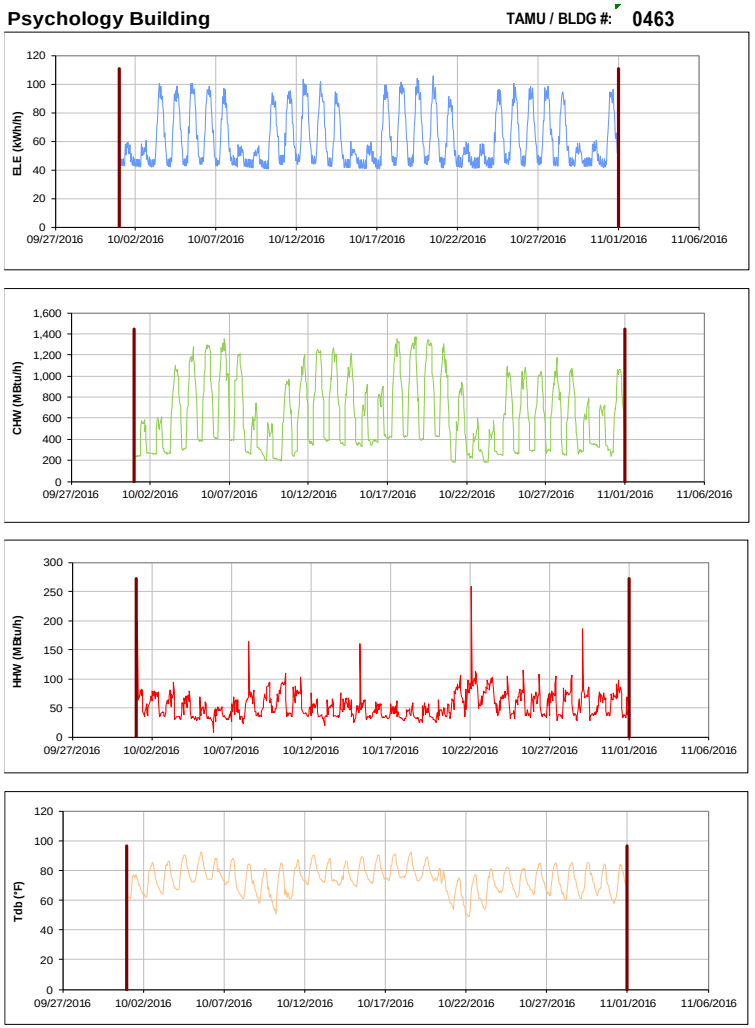


Figure III-78 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Psychology Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

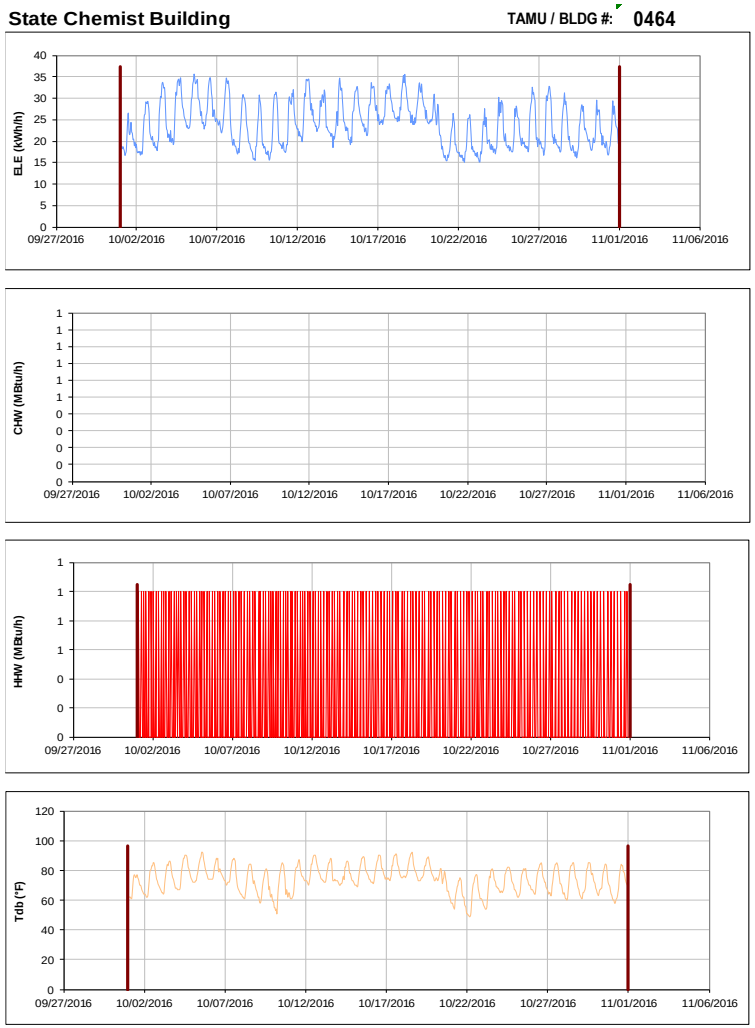


Figure III-79 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for State Chemist Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

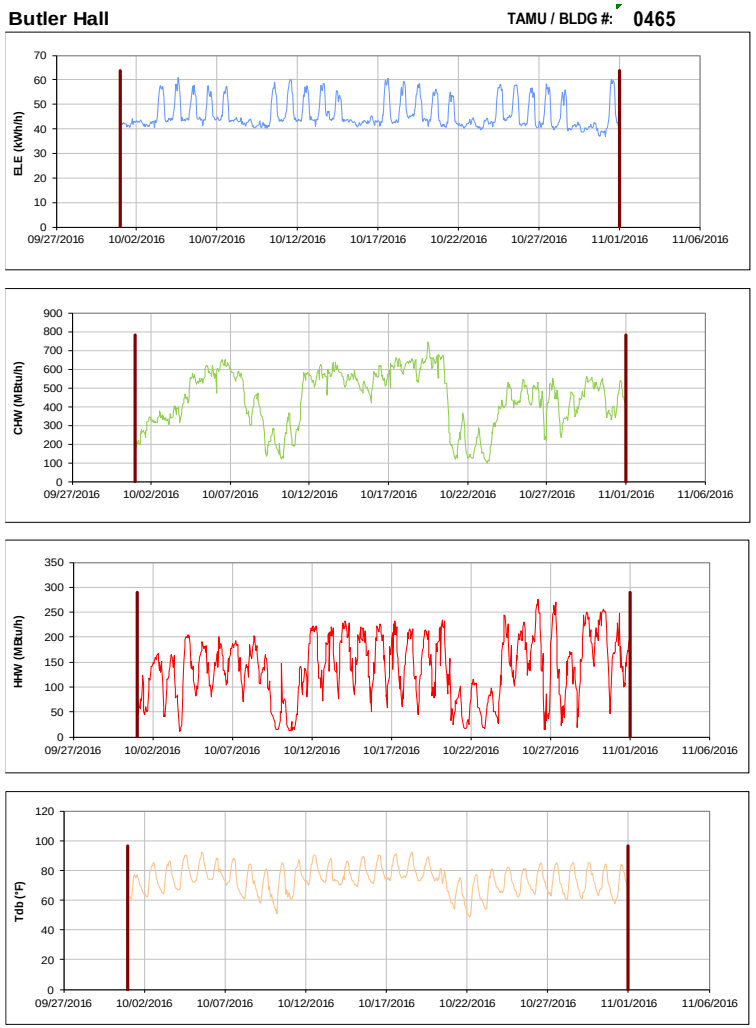


Figure III-80 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Butler Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-81 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Biological Sciences Building - East during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

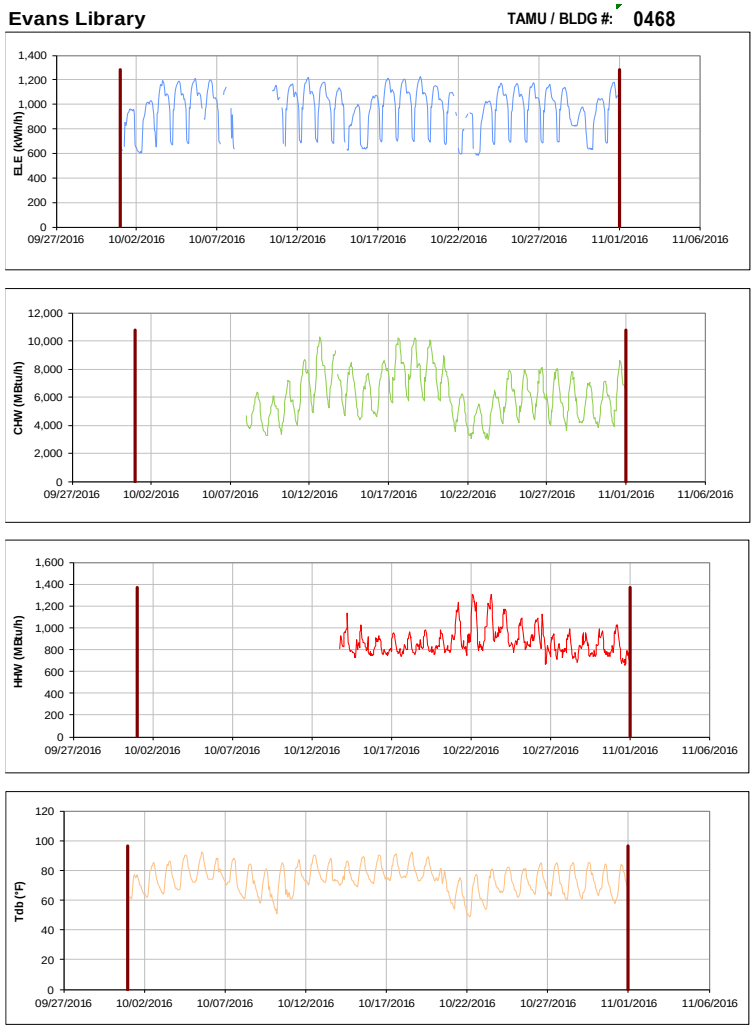


Figure III-82 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Evans Library during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

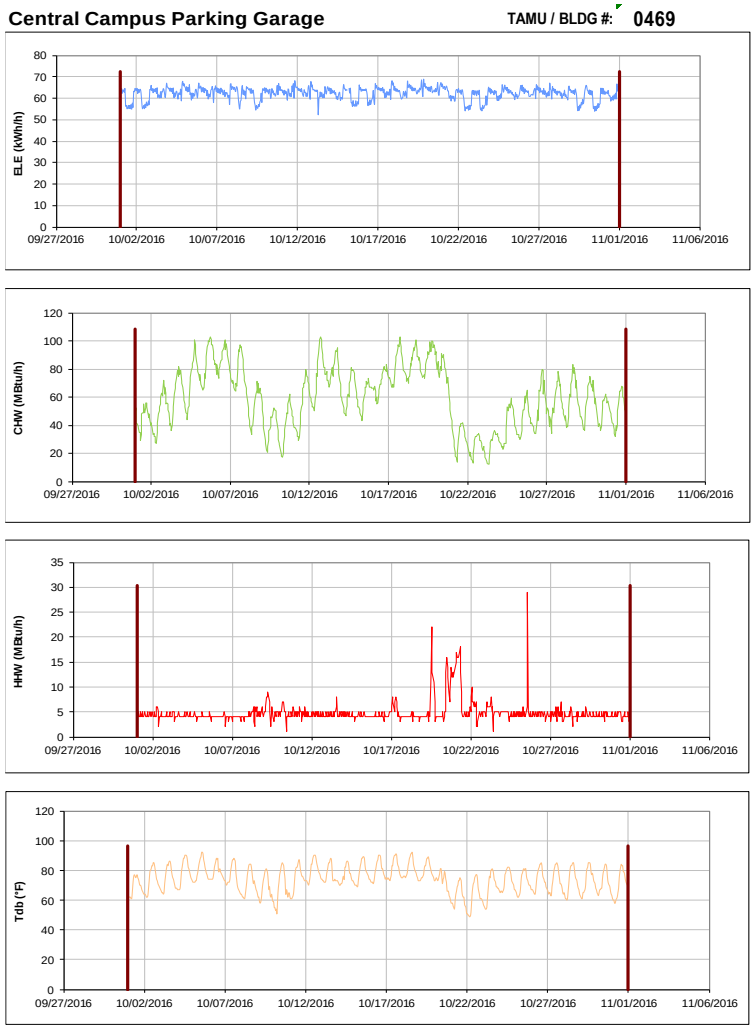


Figure III-83 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Central Campus Parking Garage during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

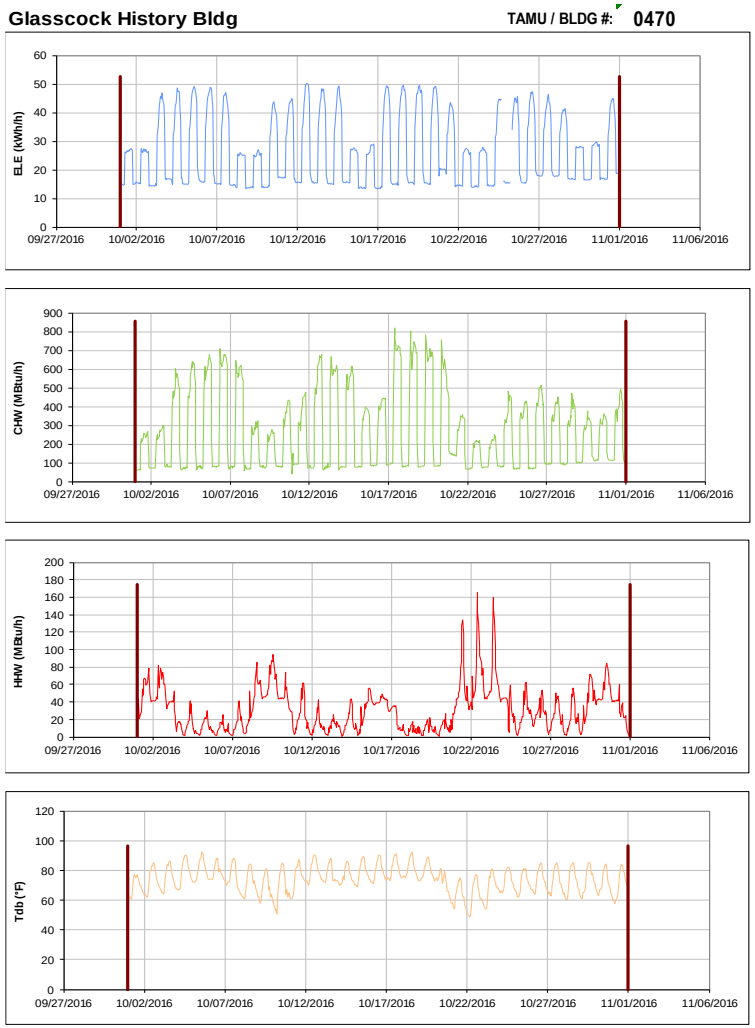


Figure III-84 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Glasscock History Bldg during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

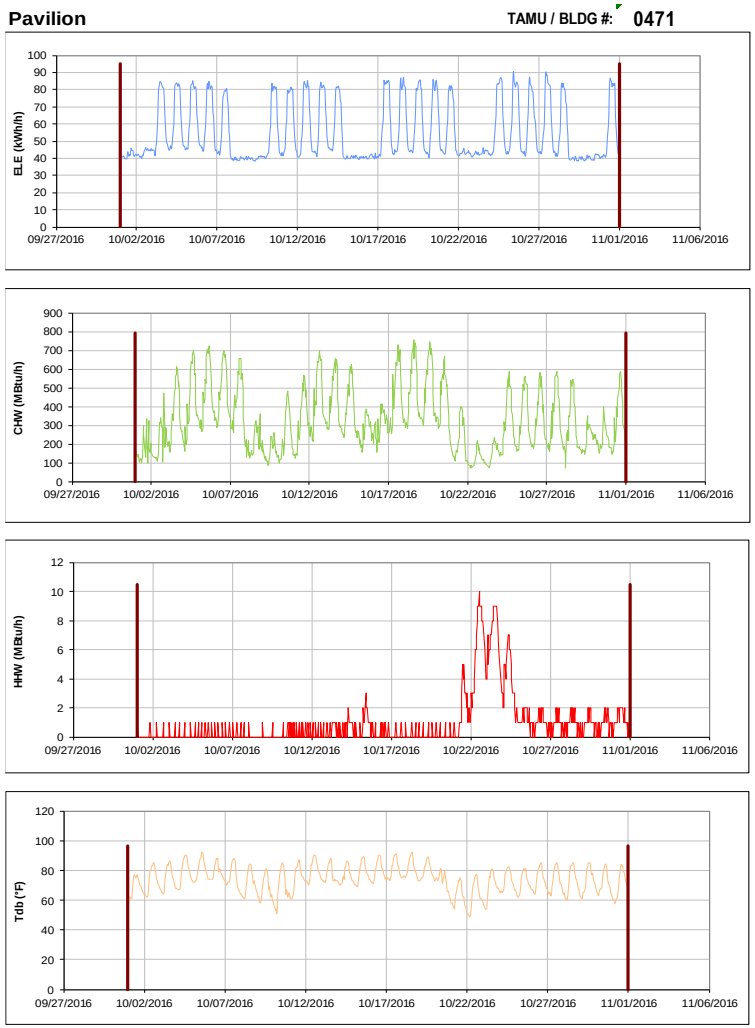


Figure III-85 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Pavilion during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

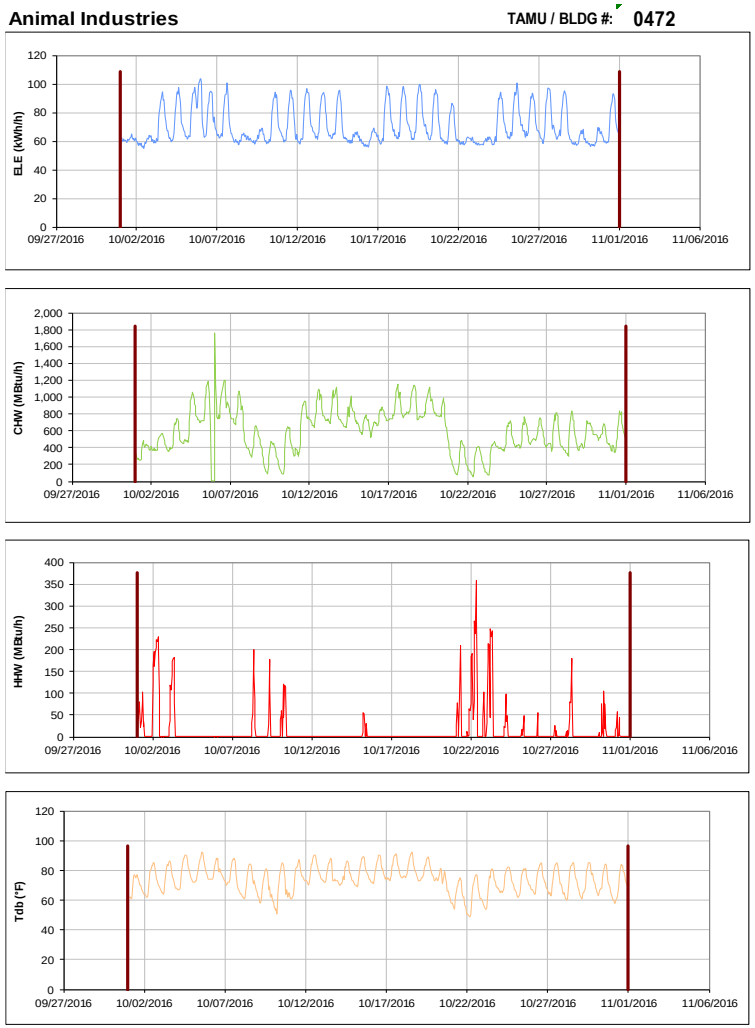


Figure III-86 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Animal Industries during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

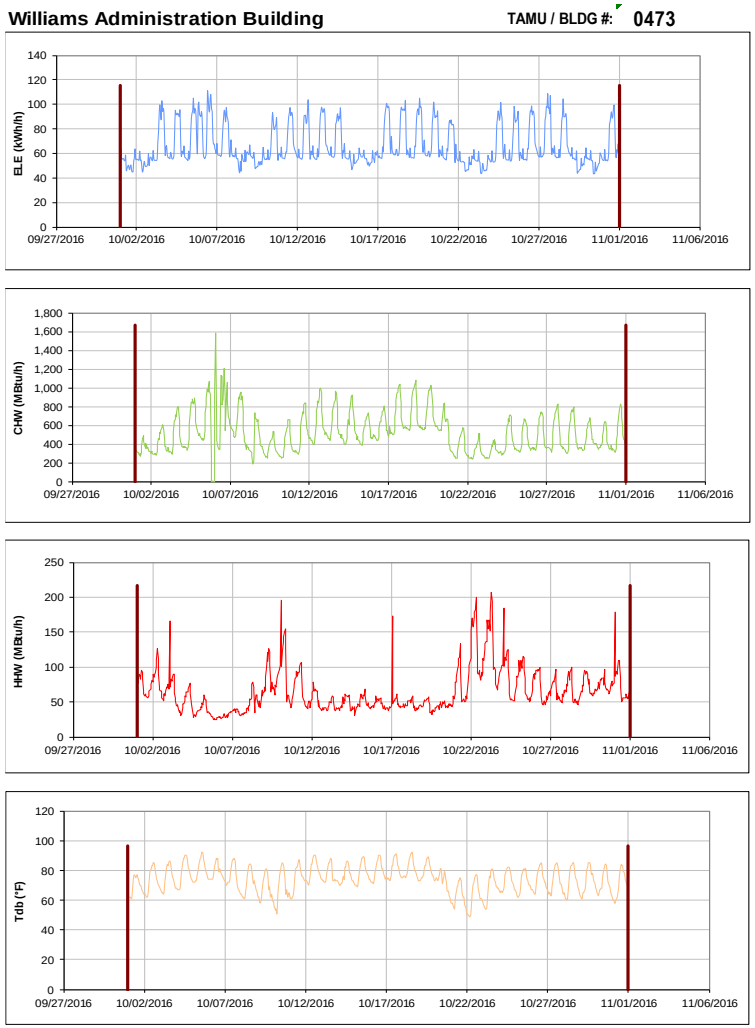


Figure III-87 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Williams Administration Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

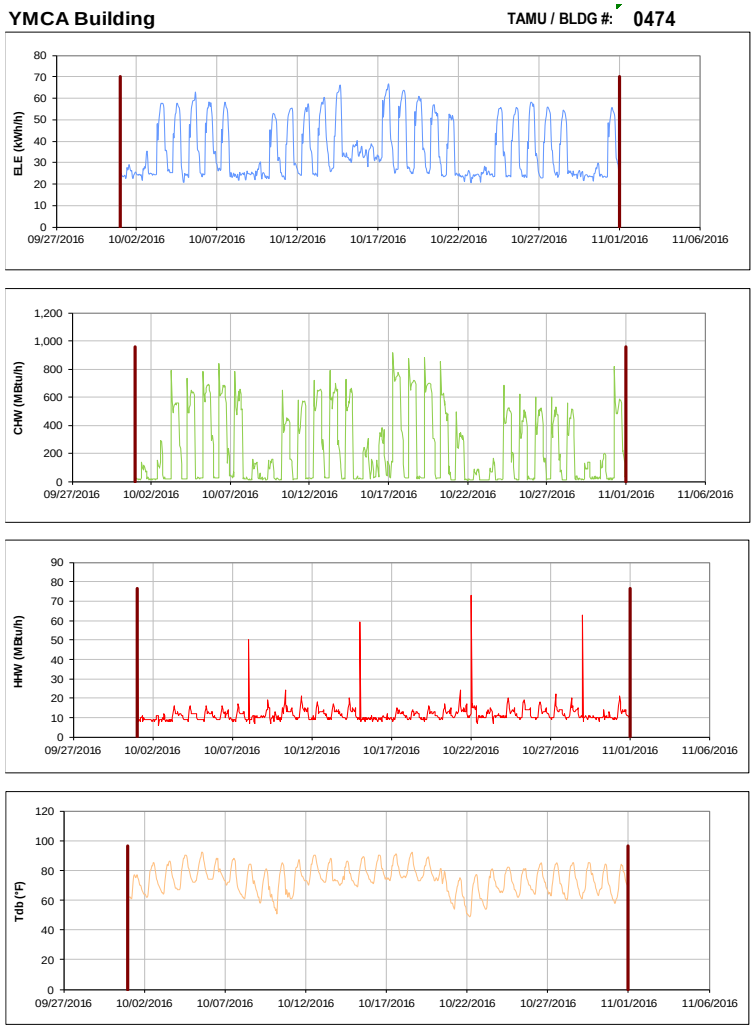


Figure III-88 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for YMCA Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

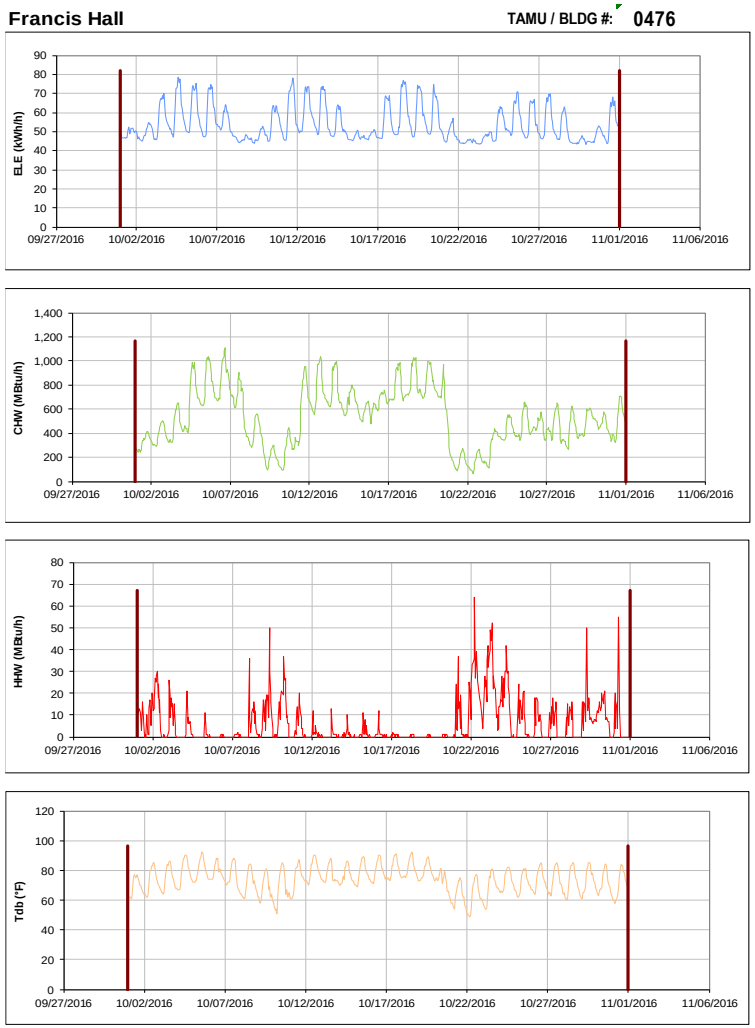


Figure III-89 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Francis Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-90 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Anthropology Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

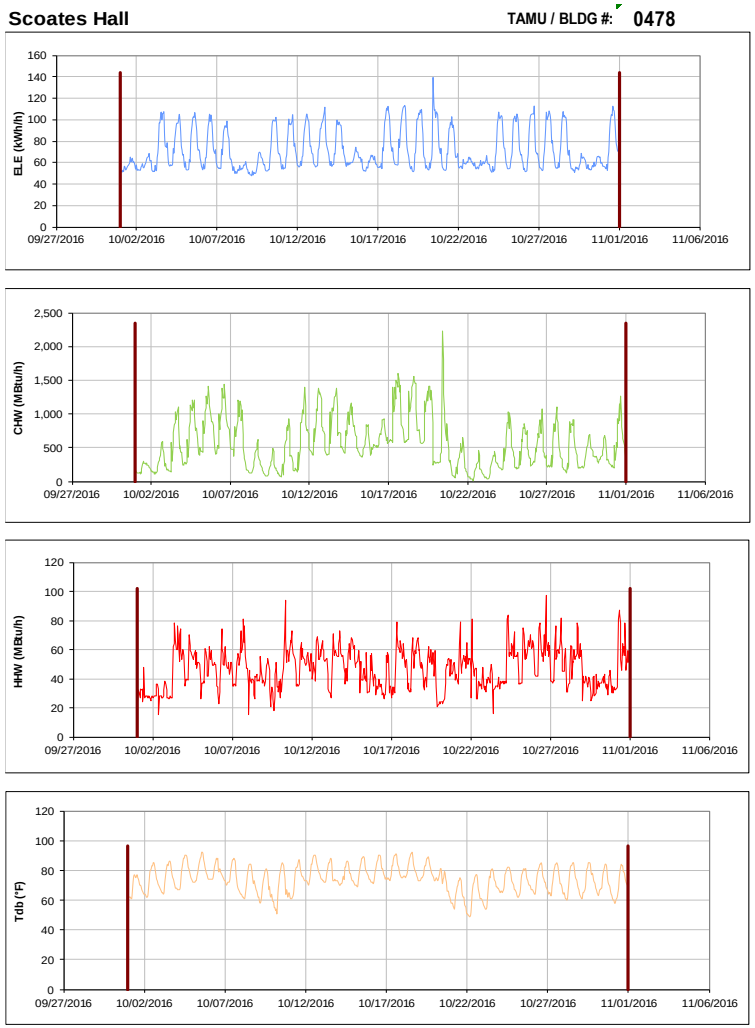


Figure III-91 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Scoates Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

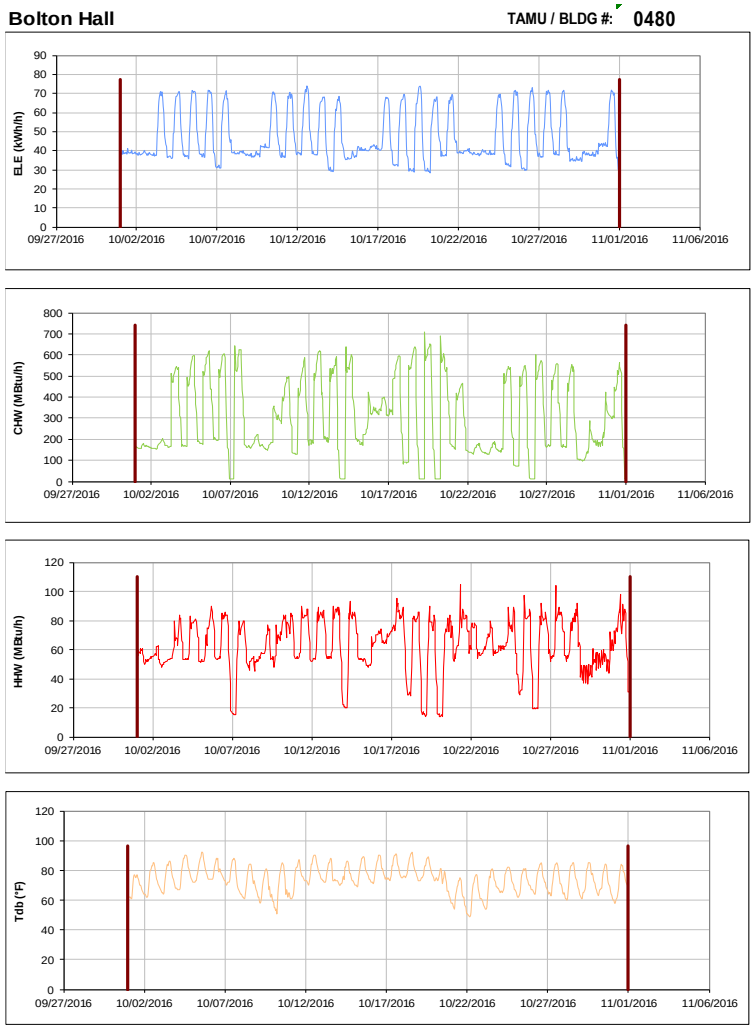


Figure III-92 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Bolton Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

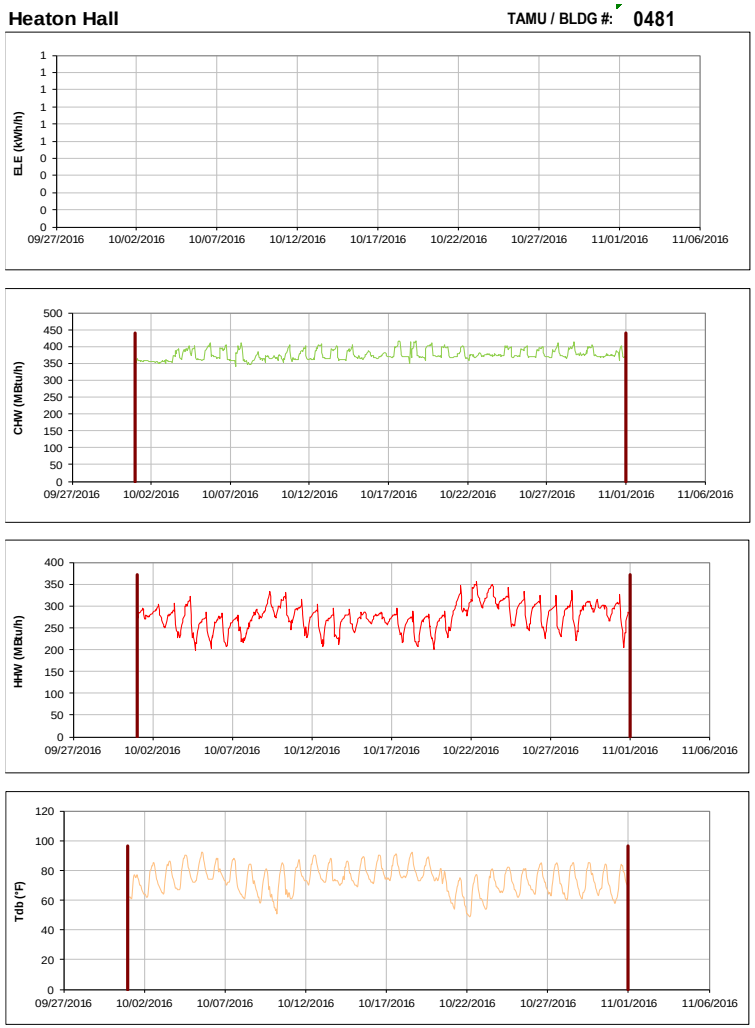


Figure III-93 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Heaton Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

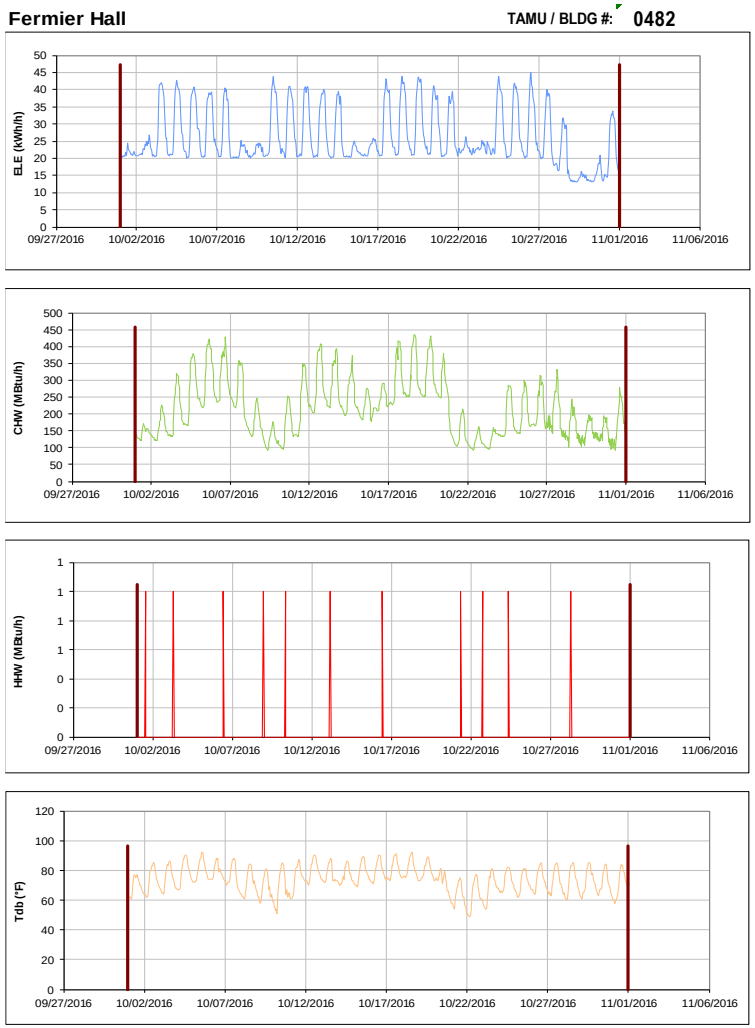


Figure III-94 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Fermier Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

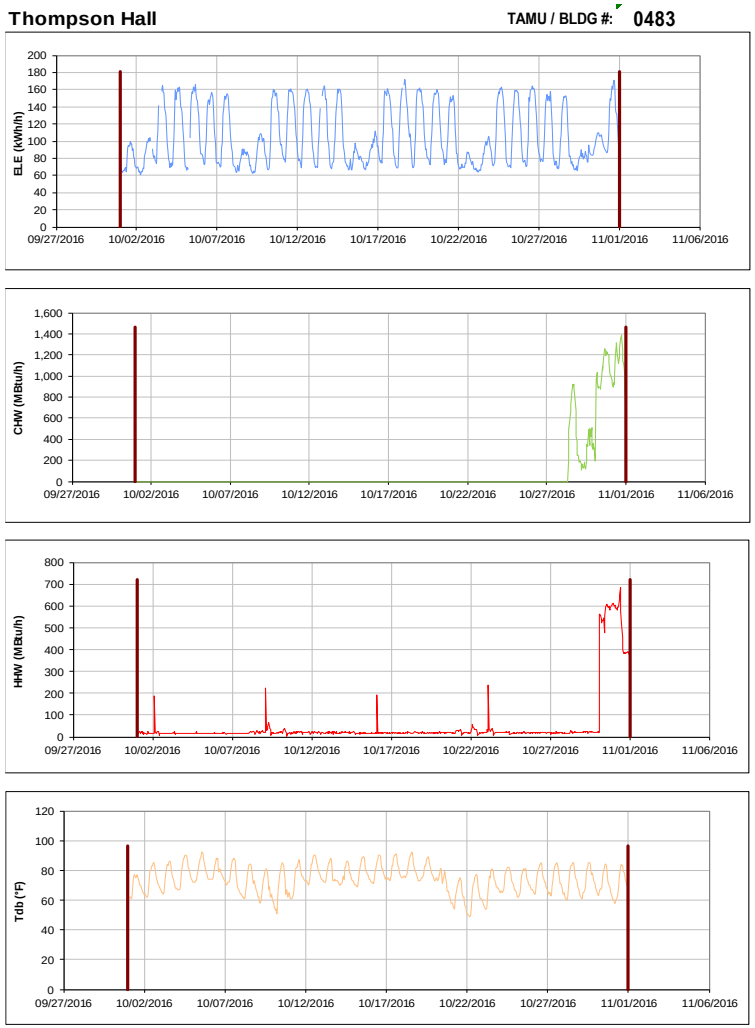


Figure III-95 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Thompson Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

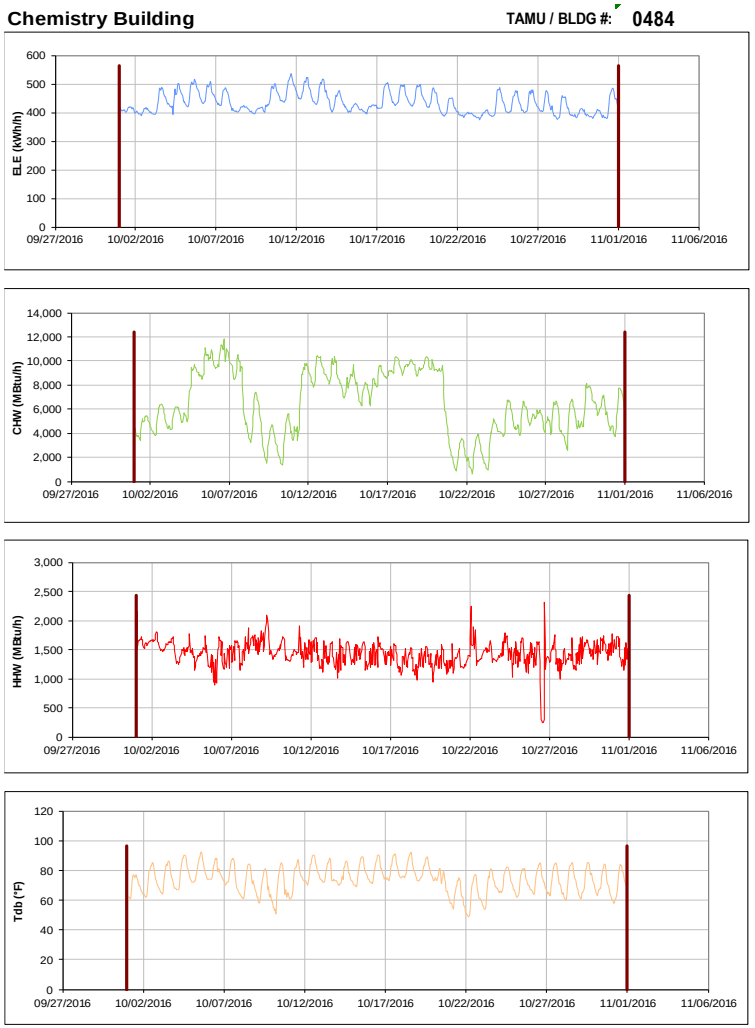


Figure III-96 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Chemistry Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

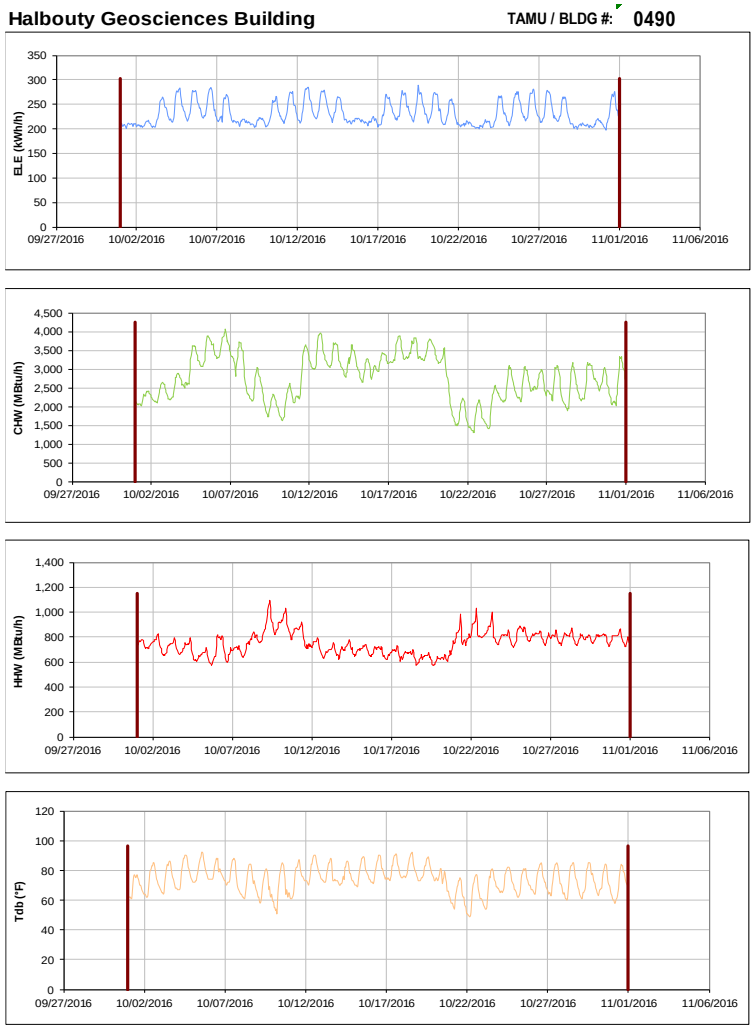


Figure III-97 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Halbouty Geosciences Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

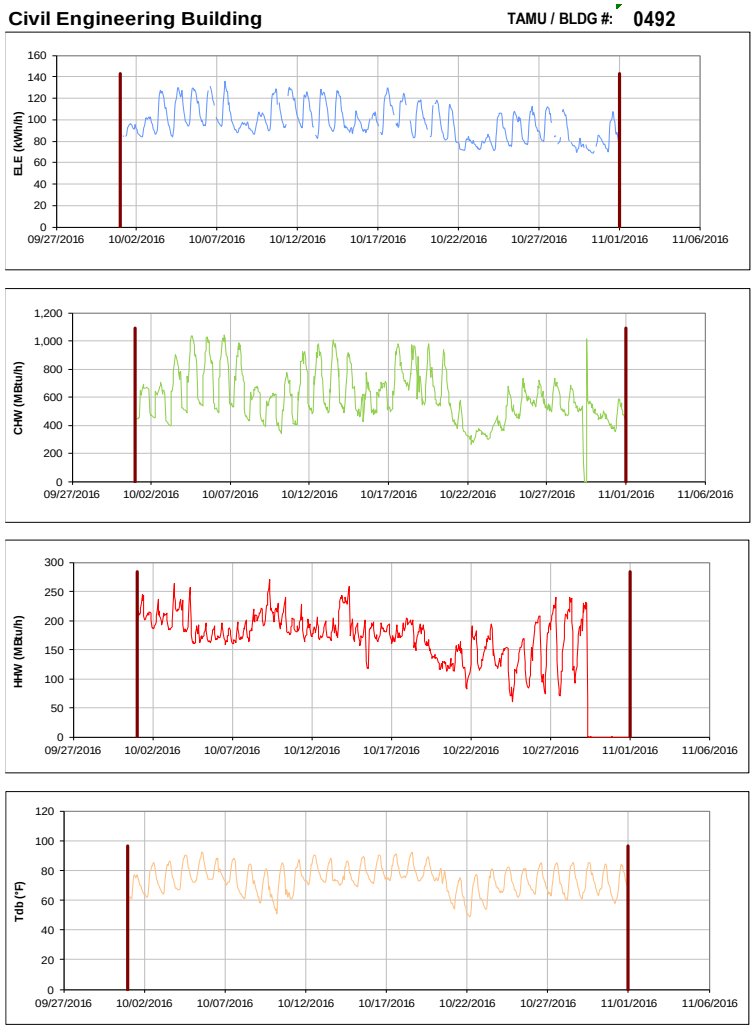


Figure III-98 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Civil Engineering Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

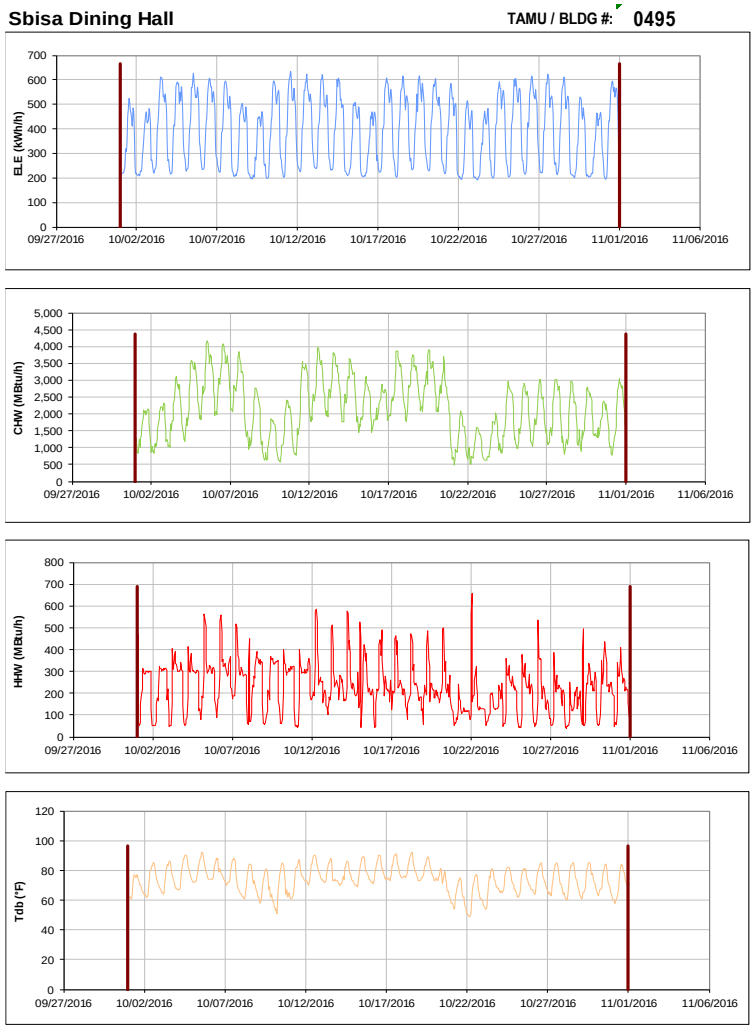


Figure III-99 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Sbisa Dining Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-100 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Utilities & Energy Services Central Office during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

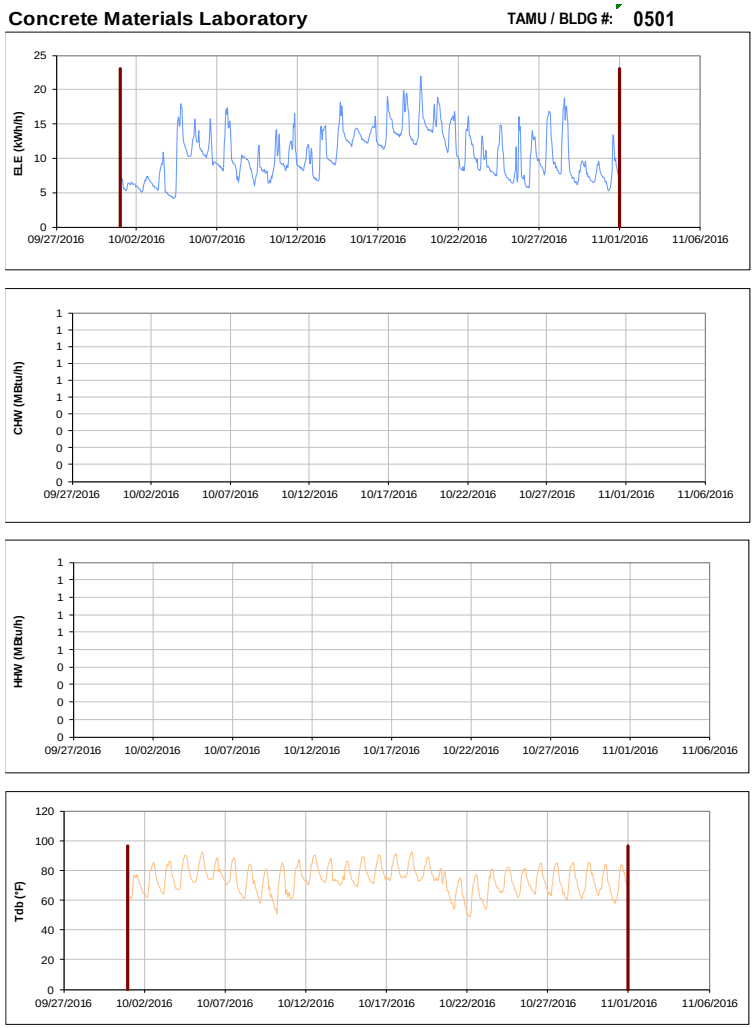


Figure III-101 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Concrete Materials Laboratory during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-102 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Nagle Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

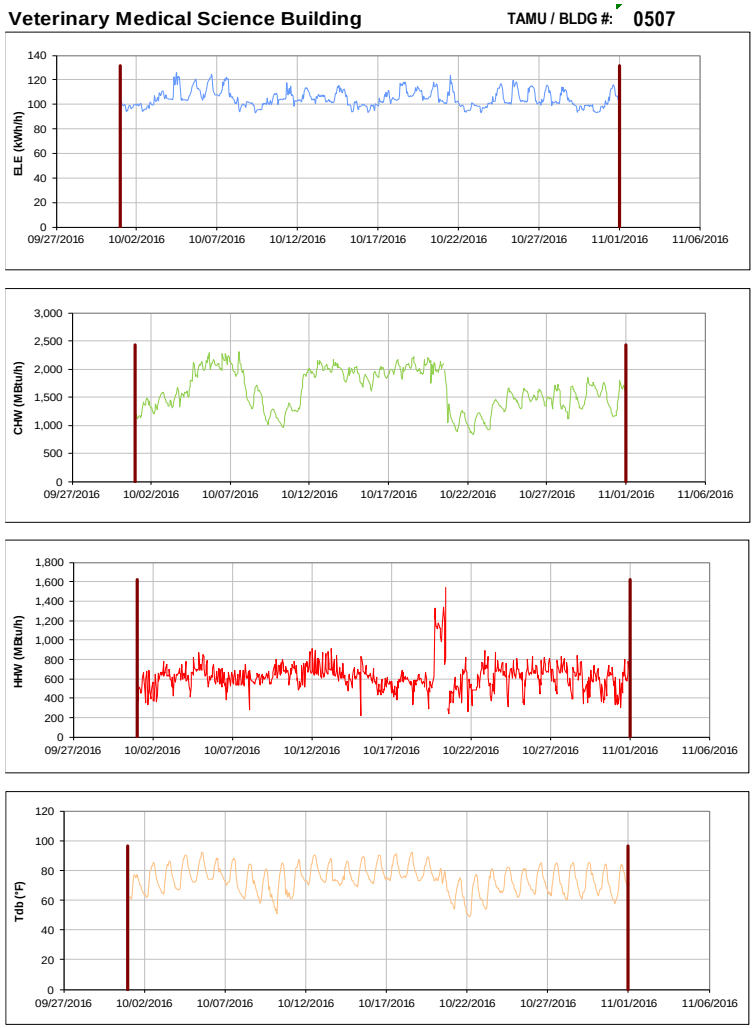


Figure III-103 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Veterinary Medical Science Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

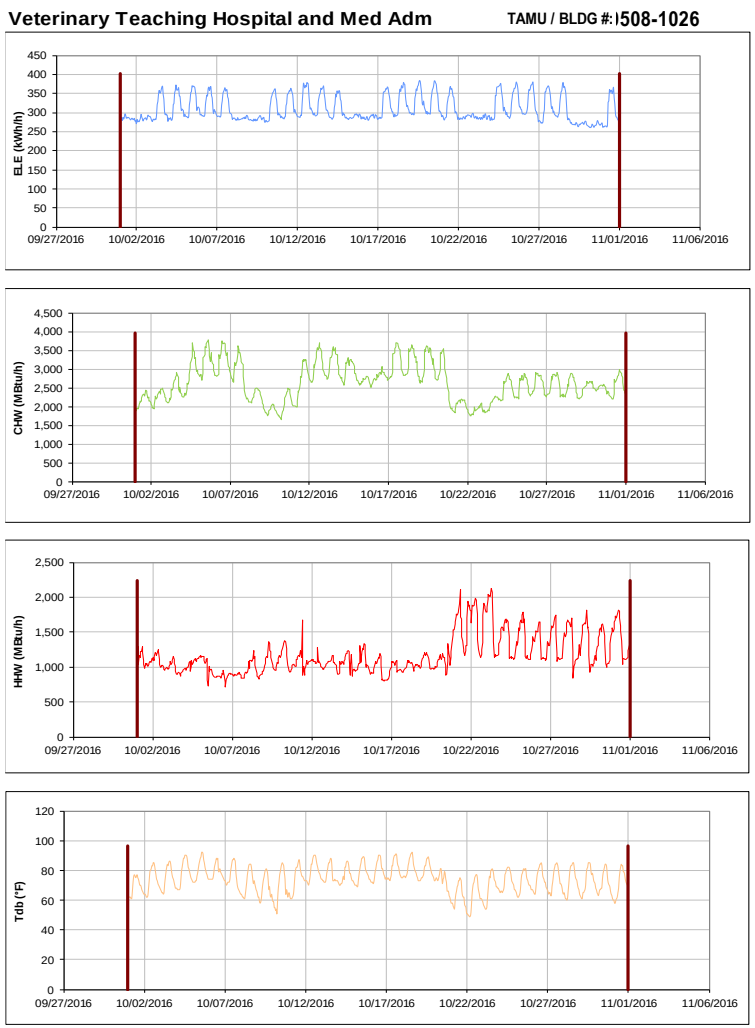


Figure III-104 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Veterinary Teaching Hospital and Med Adm during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

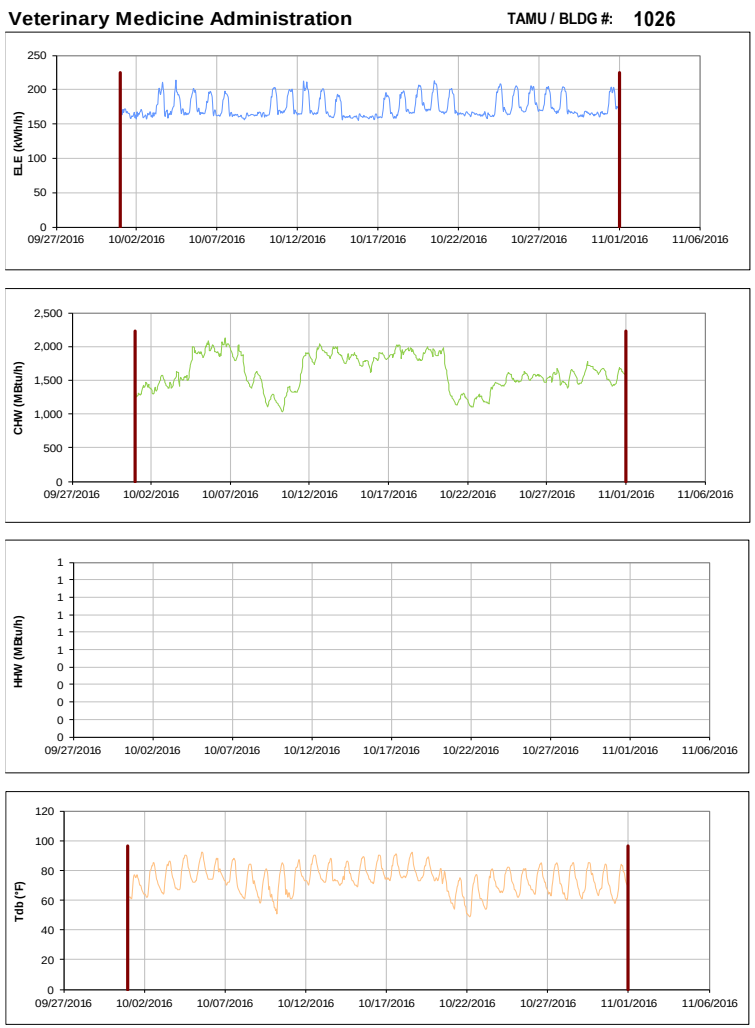


Figure III-105 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Veterinary Medicine Administration during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

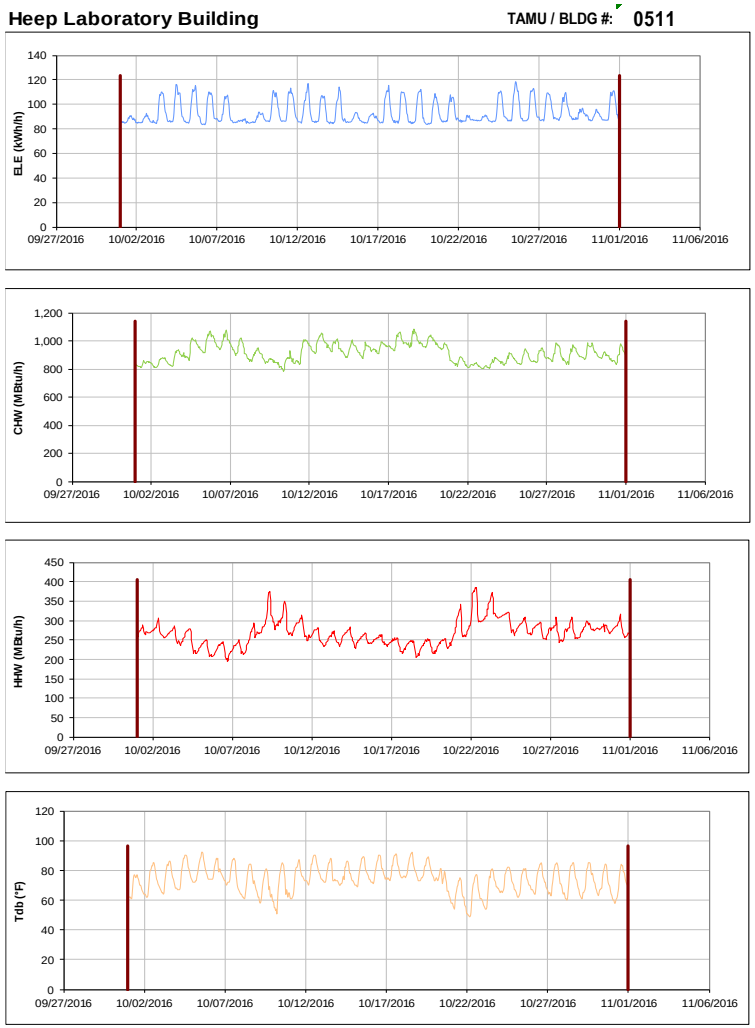


Figure III-106 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Heep Laboratory Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

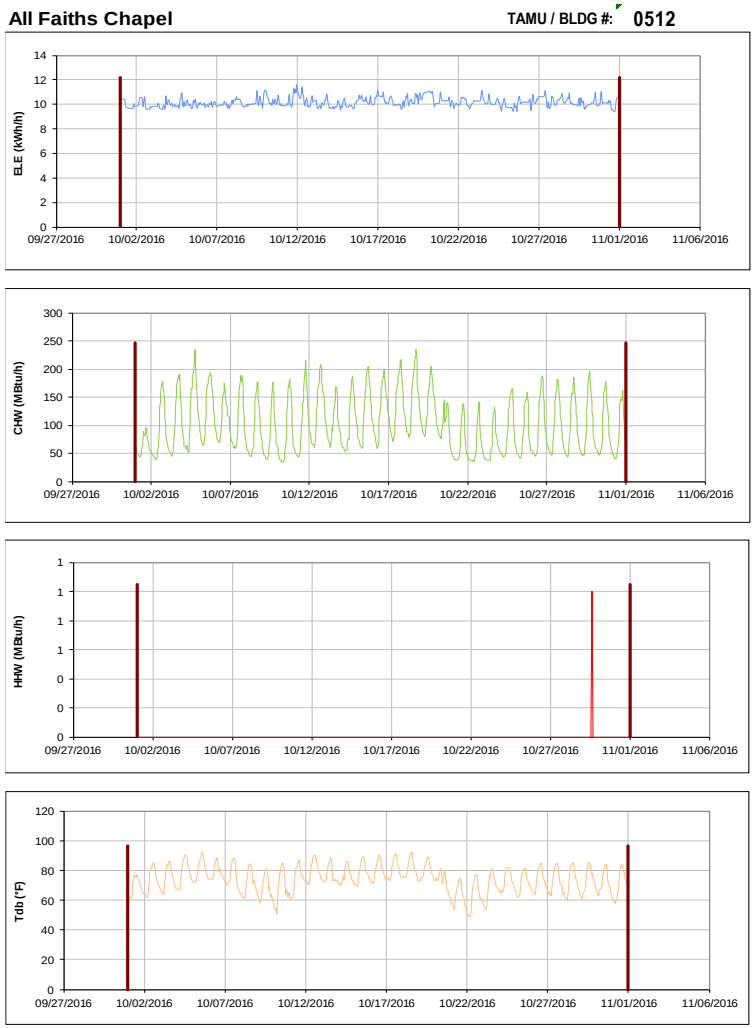


Figure III-107 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for All Faiths Chapel during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

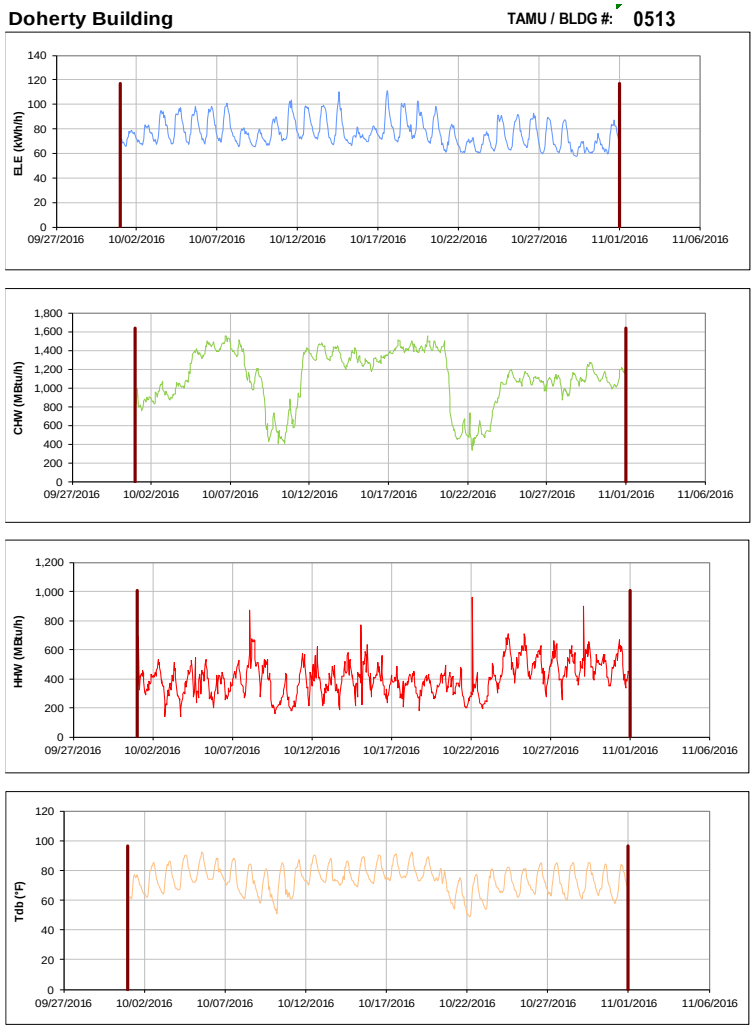


Figure III-108 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Doherty Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

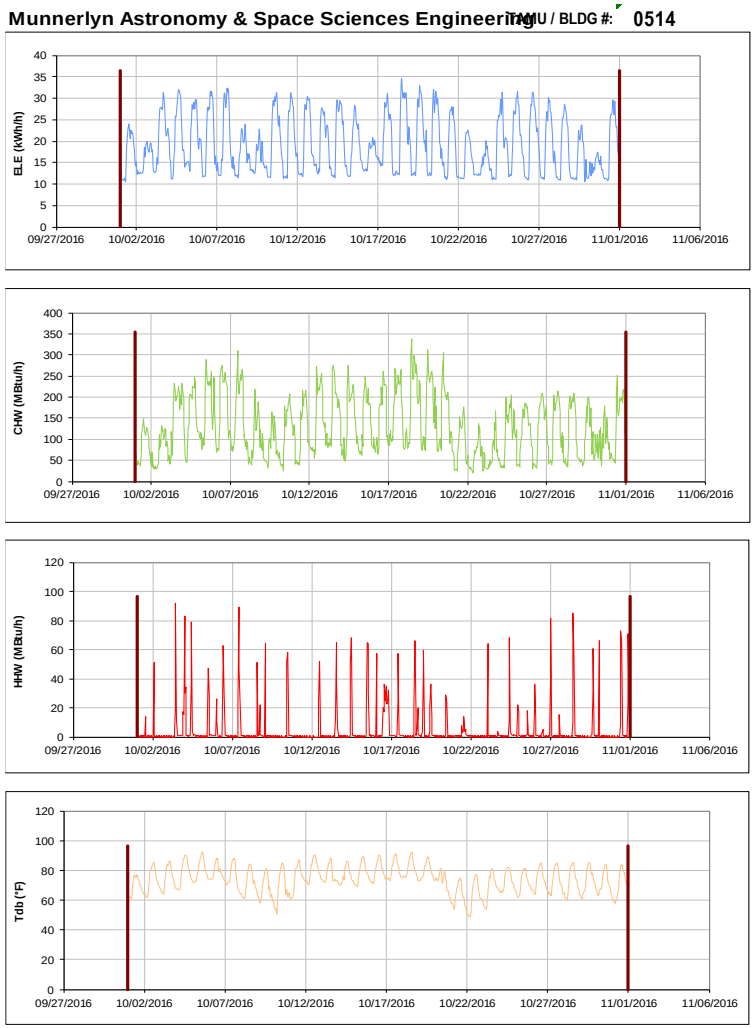


Figure III-109 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Munnerlyn Astronomy & Space Sciences Engineering during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

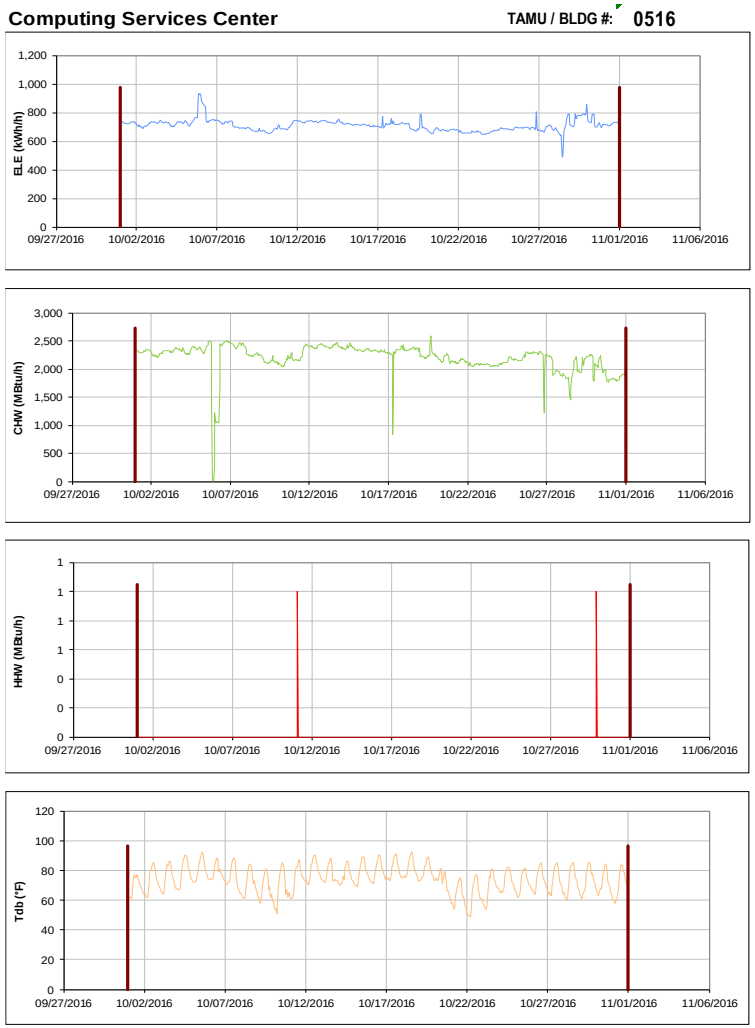


Figure III-110 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Computing Services Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

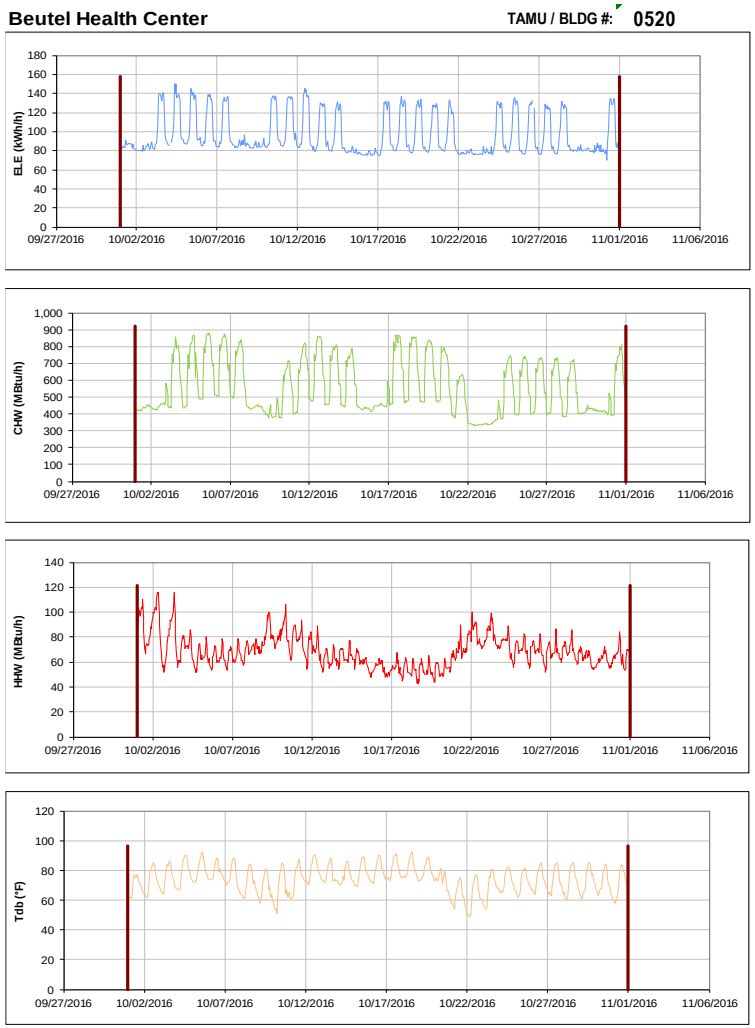


Figure III-111 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Beutel Health Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

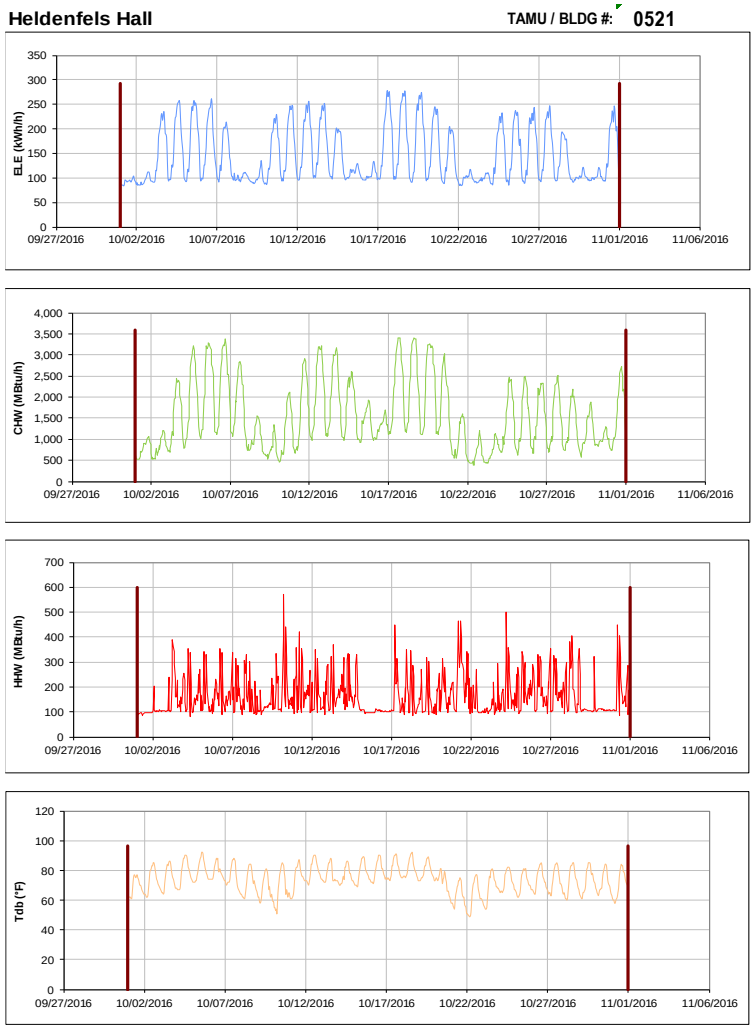


Figure III-112 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Heldenfels Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

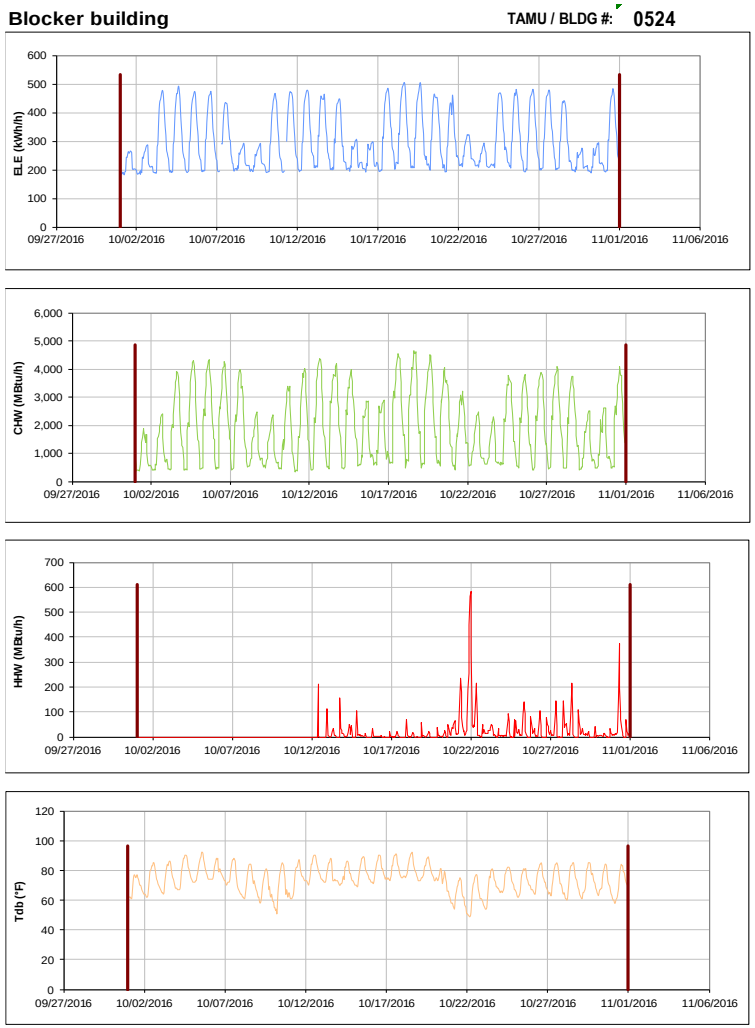


Figure III-113 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Blocker building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

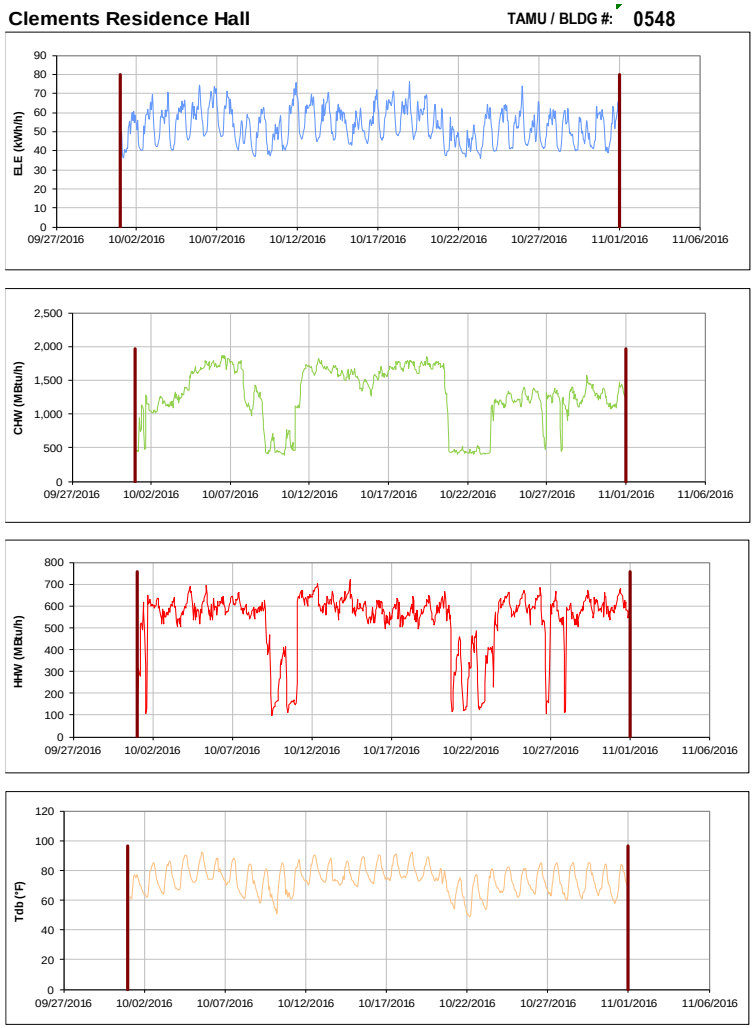


Figure III-114 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Clements Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

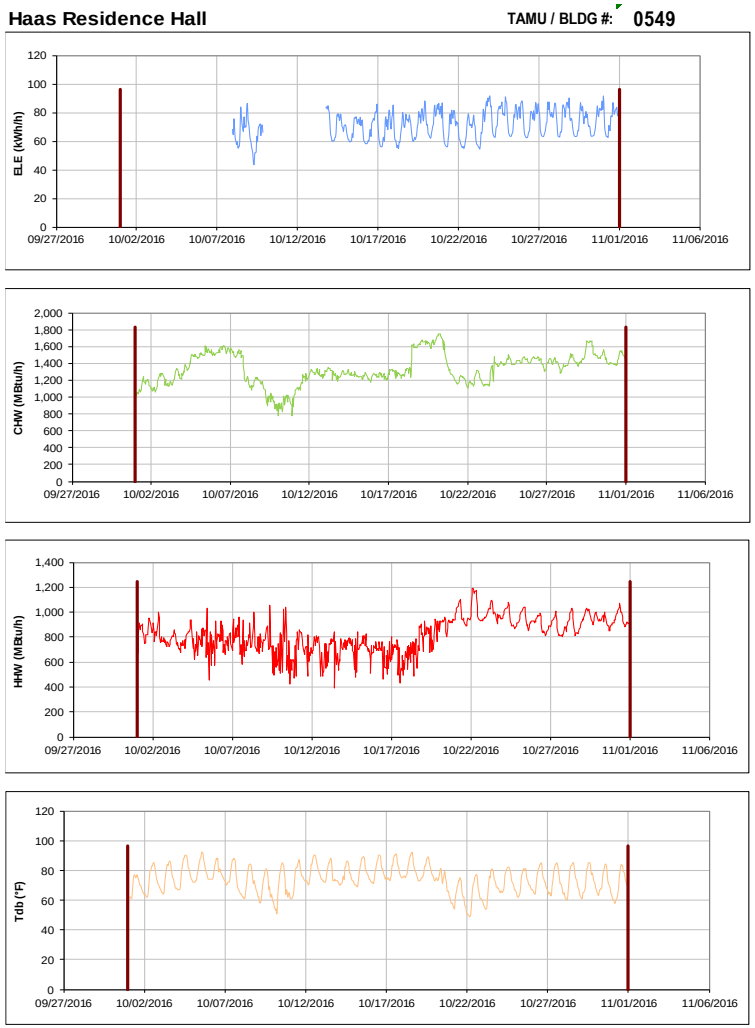


Figure III-115 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Haas Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

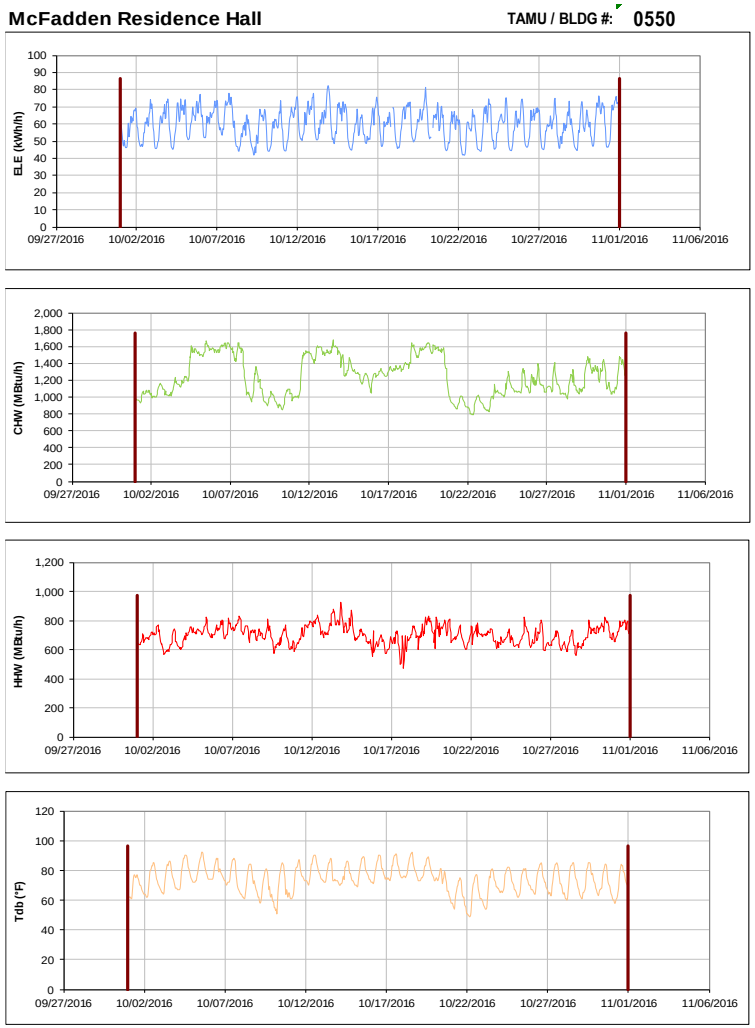


Figure III-116 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for McFadden Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

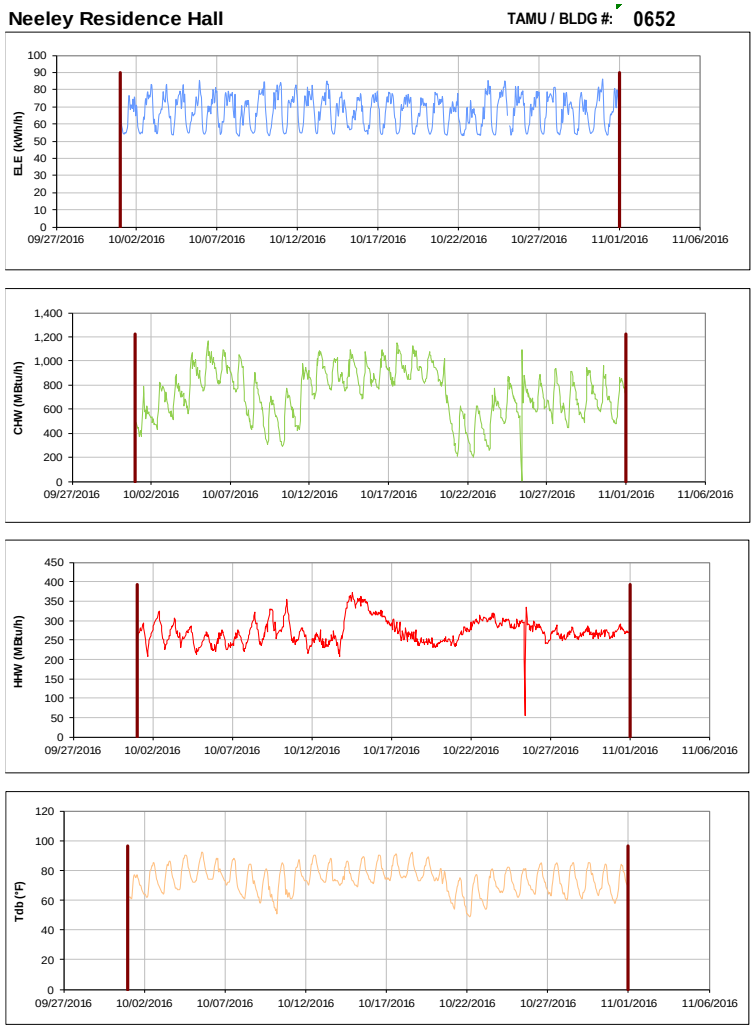


Figure III-117 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Neeley Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

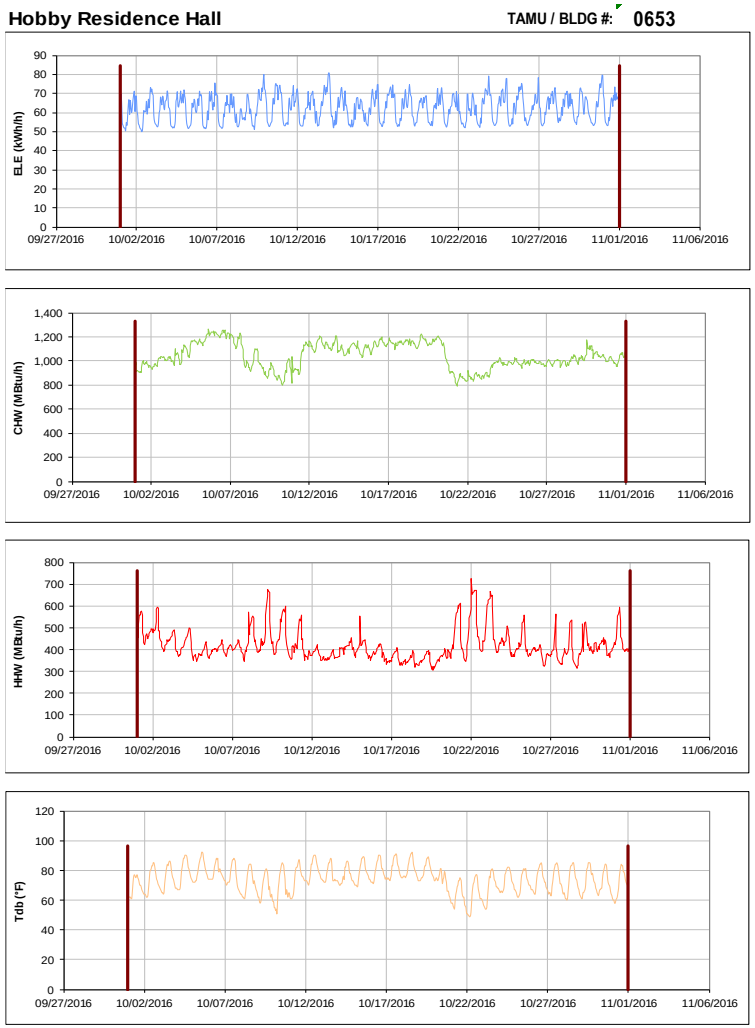


Figure III-118 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Hobby Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

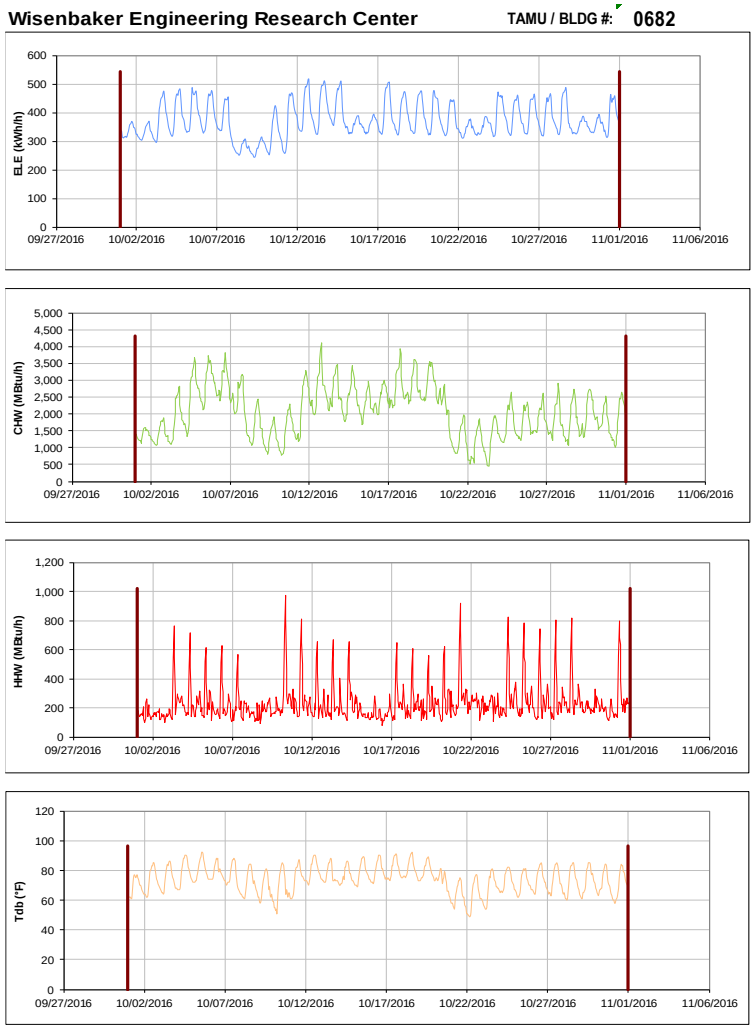


Figure III-119 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Wisenbaker Engineering Research Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

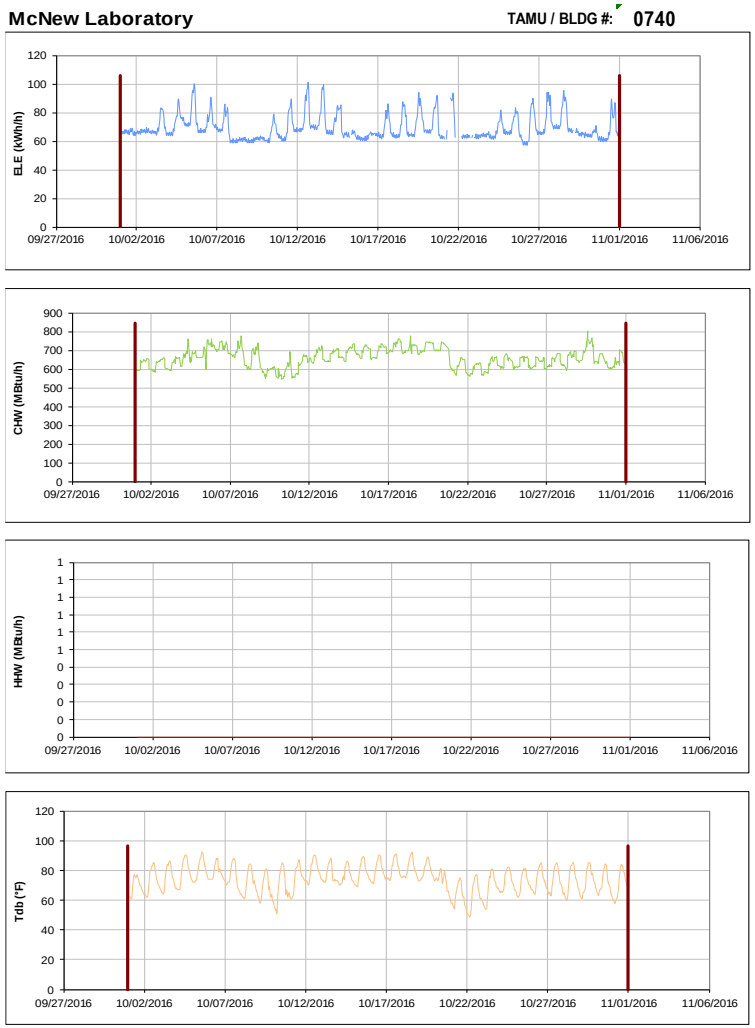


Figure III-120 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for McNew Laboratory during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

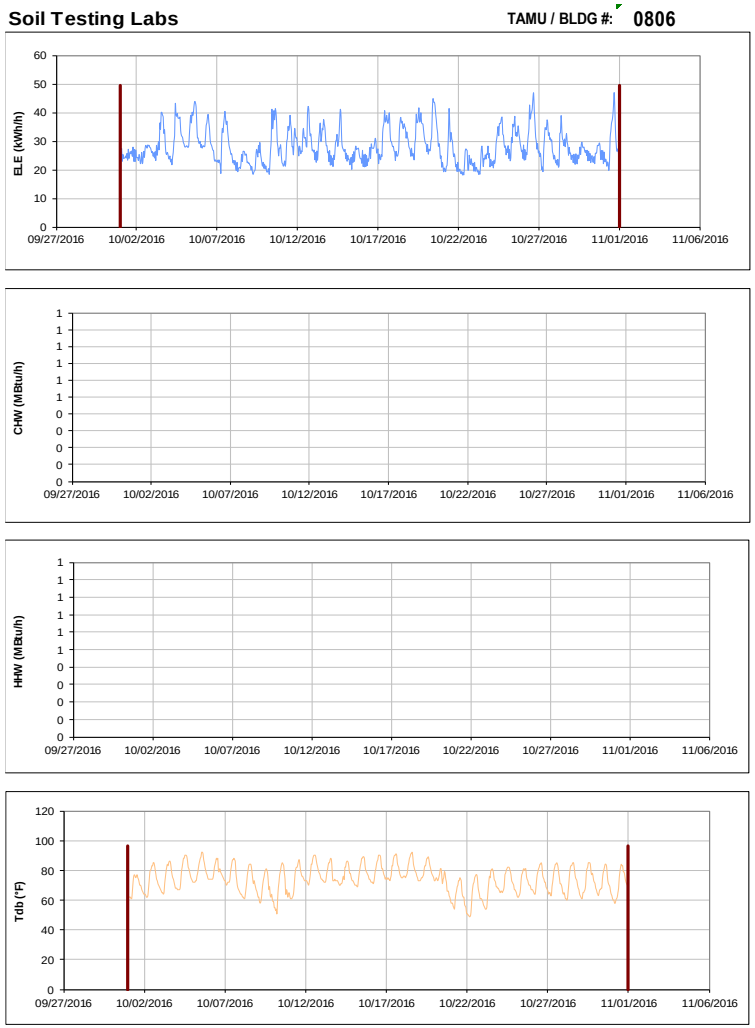


Figure III-121 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Soil Testing Labs during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-122 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Entomology Research Lab during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

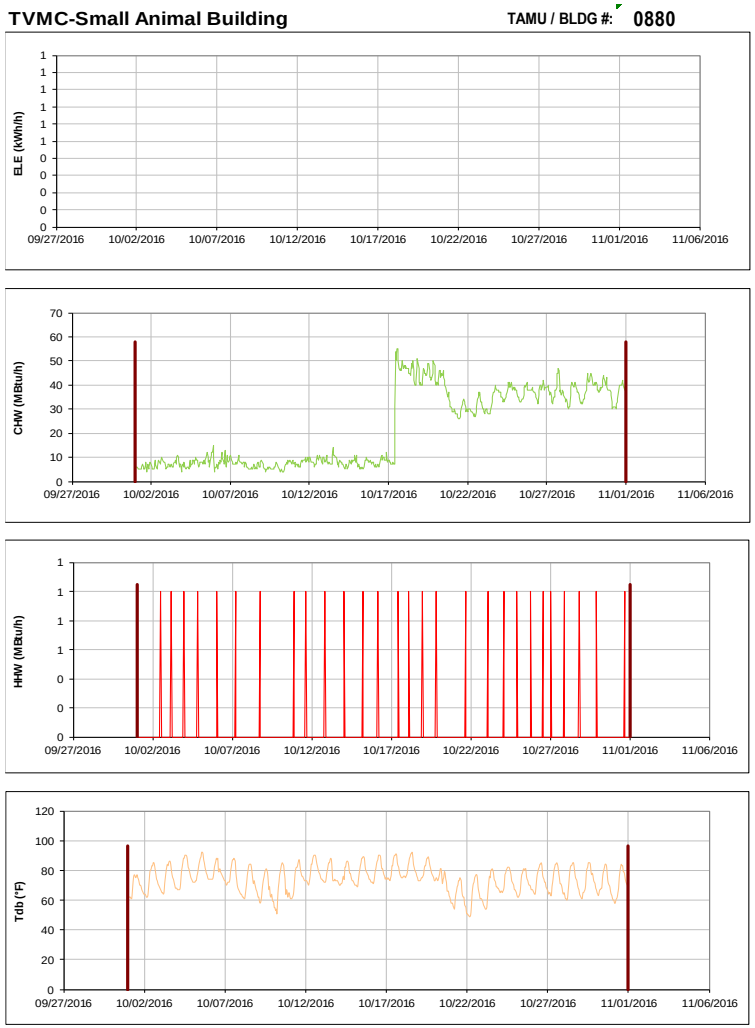


Figure III-123 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for TVMC-Small Animal Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

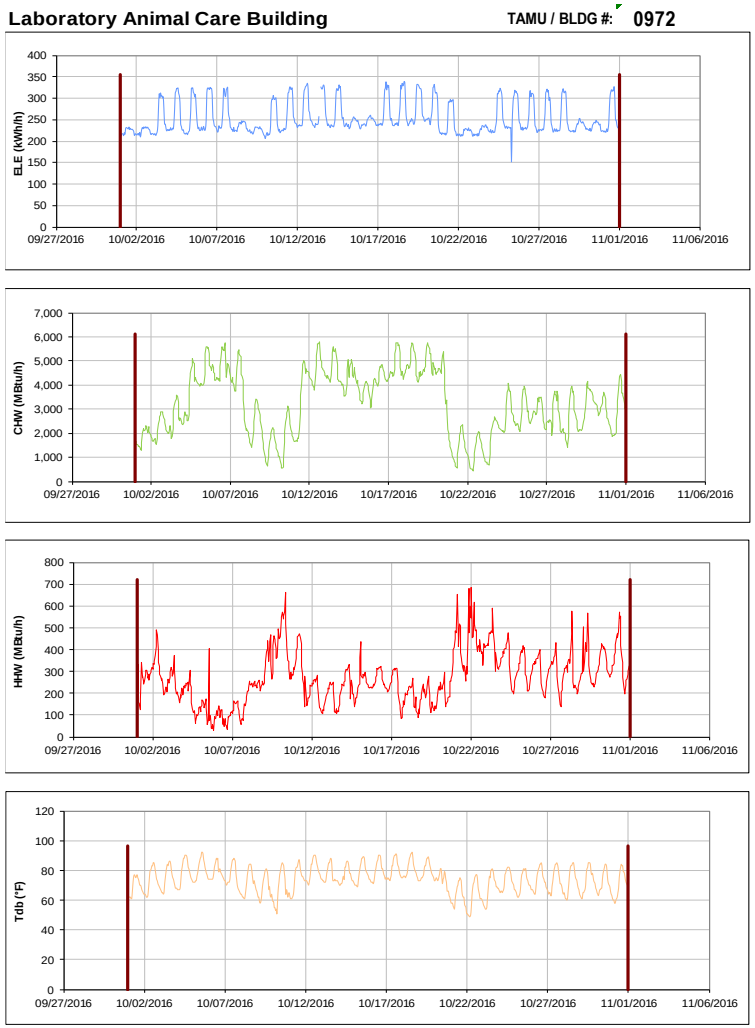


Figure III-124 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Laboratory Animal Care Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

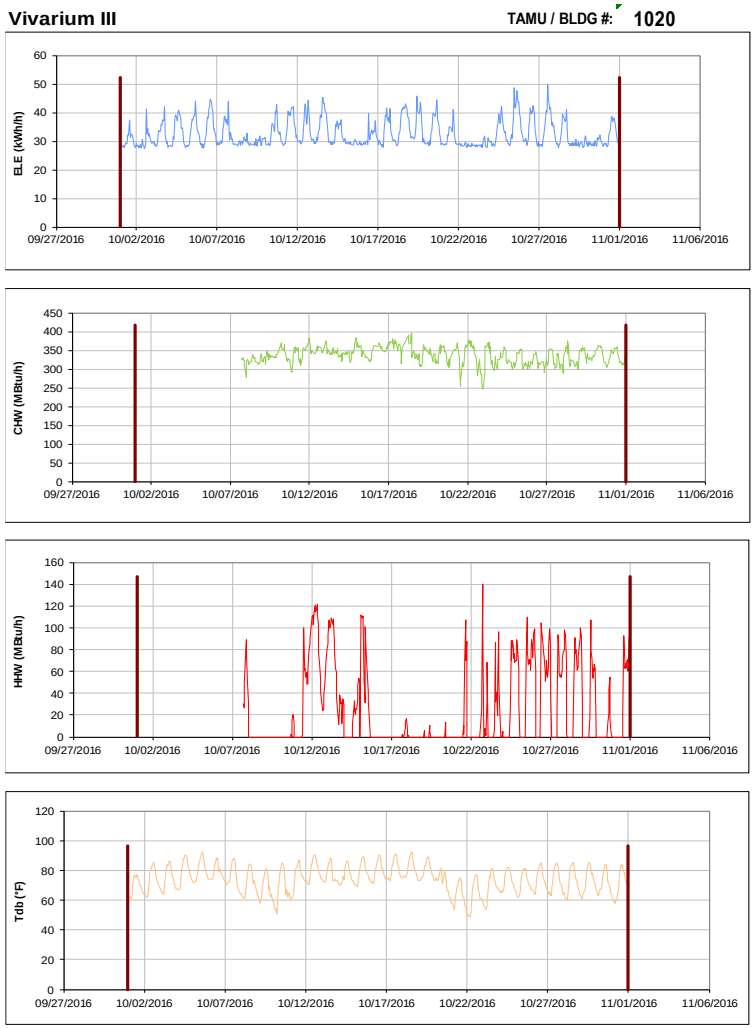


Figure III-125 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Vivarium III during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

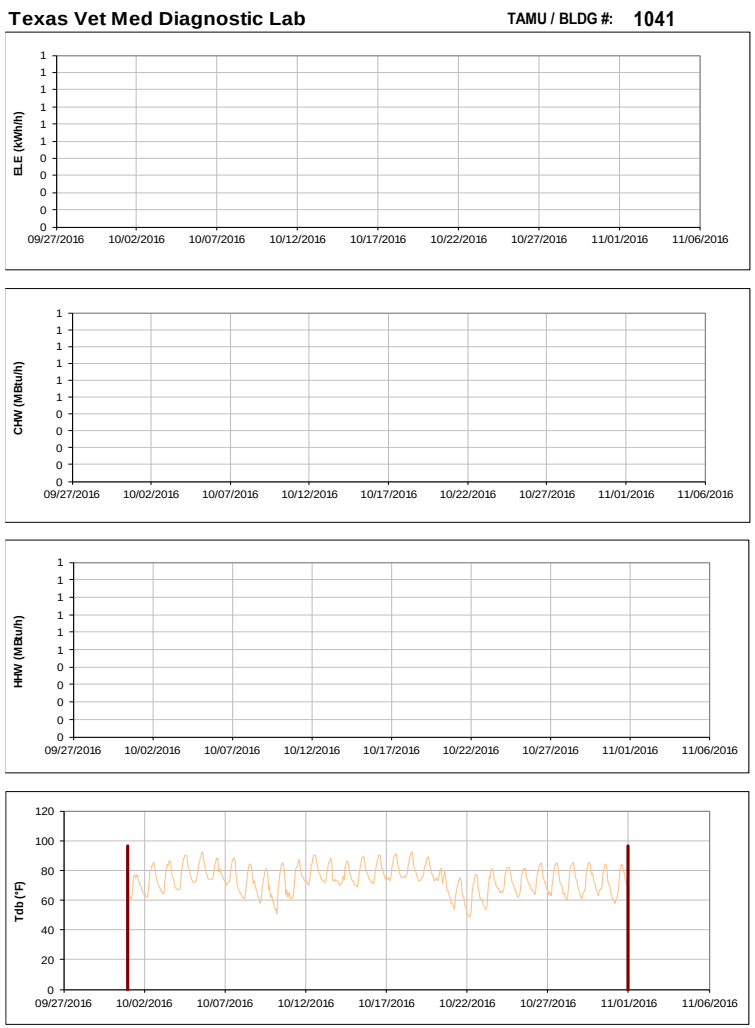


Figure III-126 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Texas Vet Med Diagnostic Lab during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

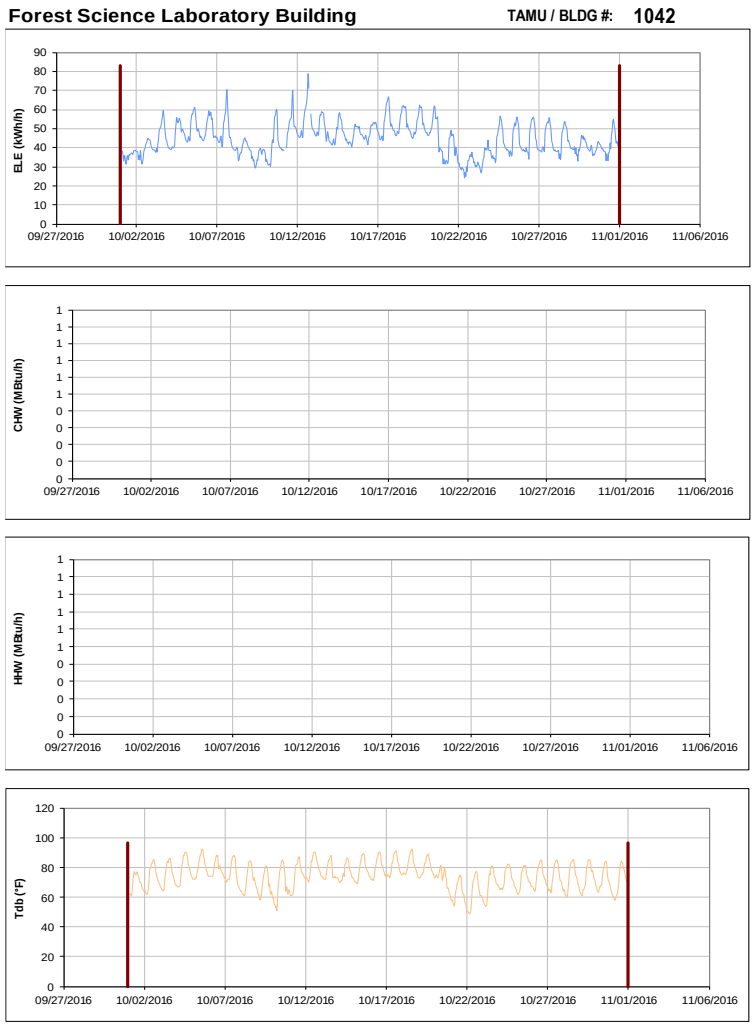


Figure III-127 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Forest Science Laboratory Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

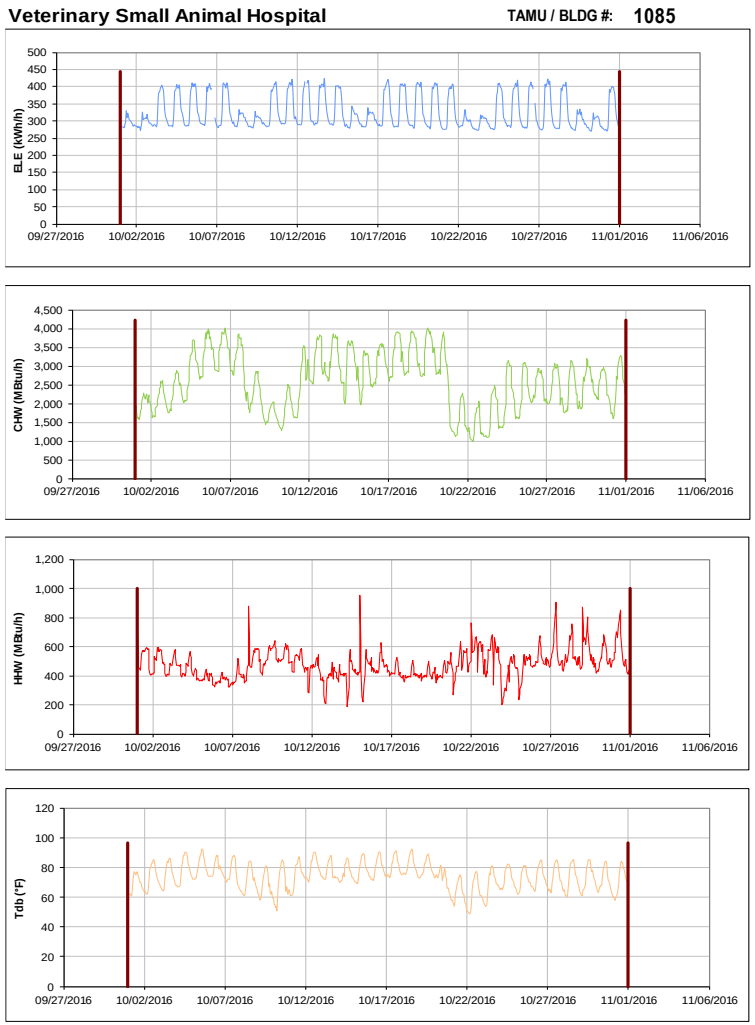


Figure III-128 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Veterinary Small Animal Hospital during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

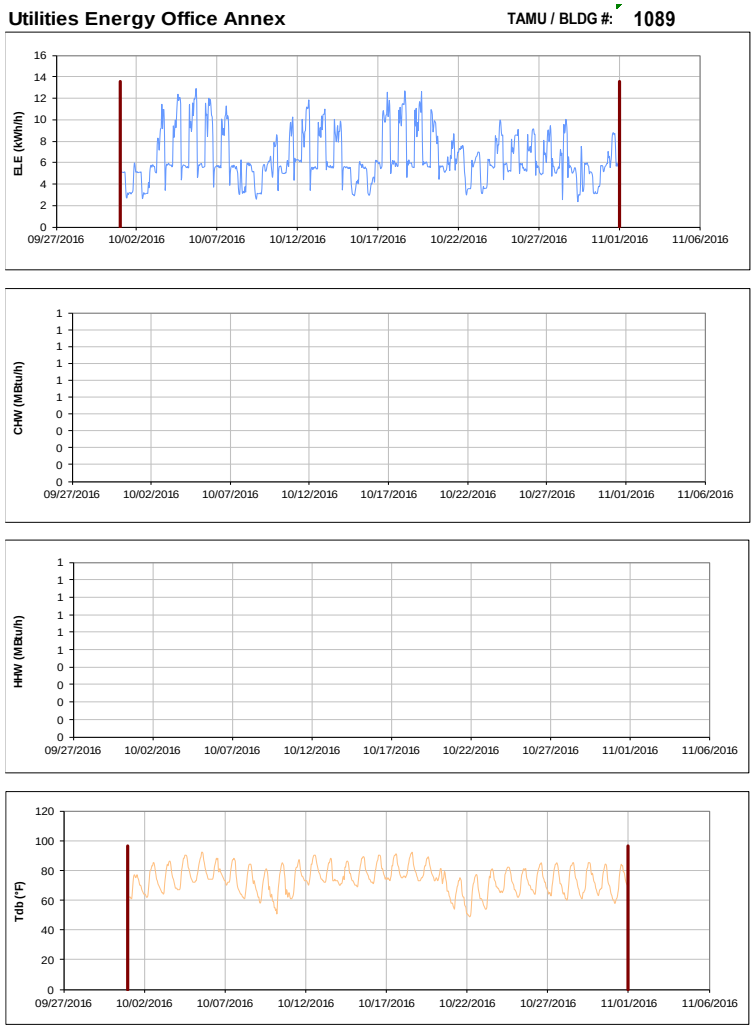


Figure III-129 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Utilities Energy Office Annex during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

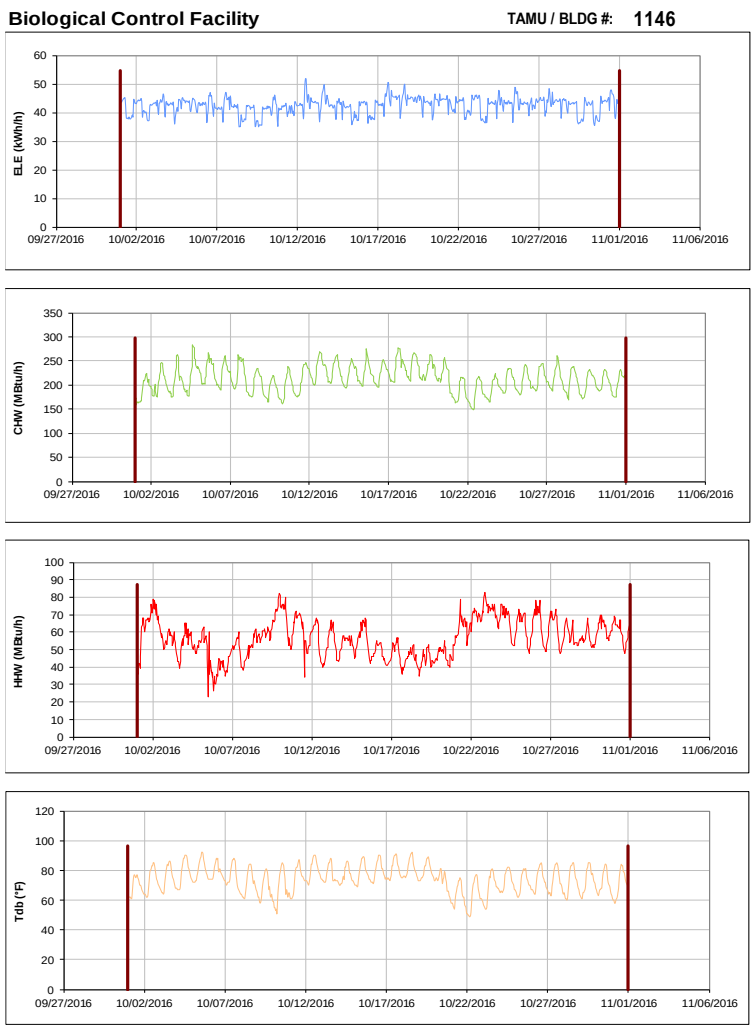


Figure III-130 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Biological Control Facility during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

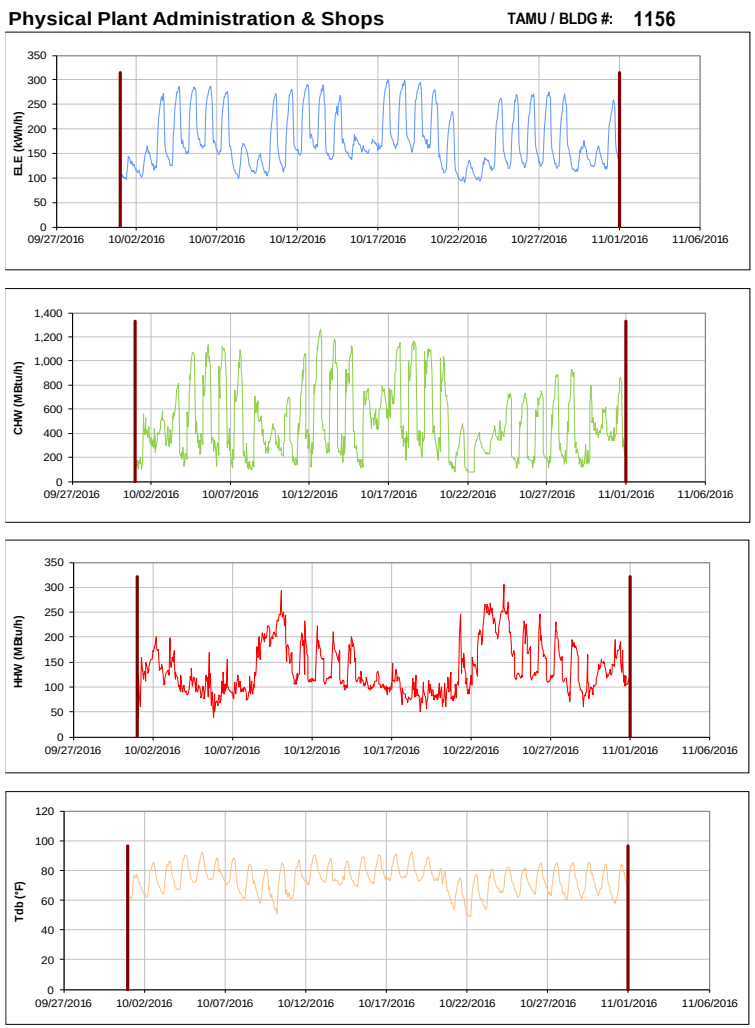


Figure III-131 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Physical Plant Administration & Shops during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

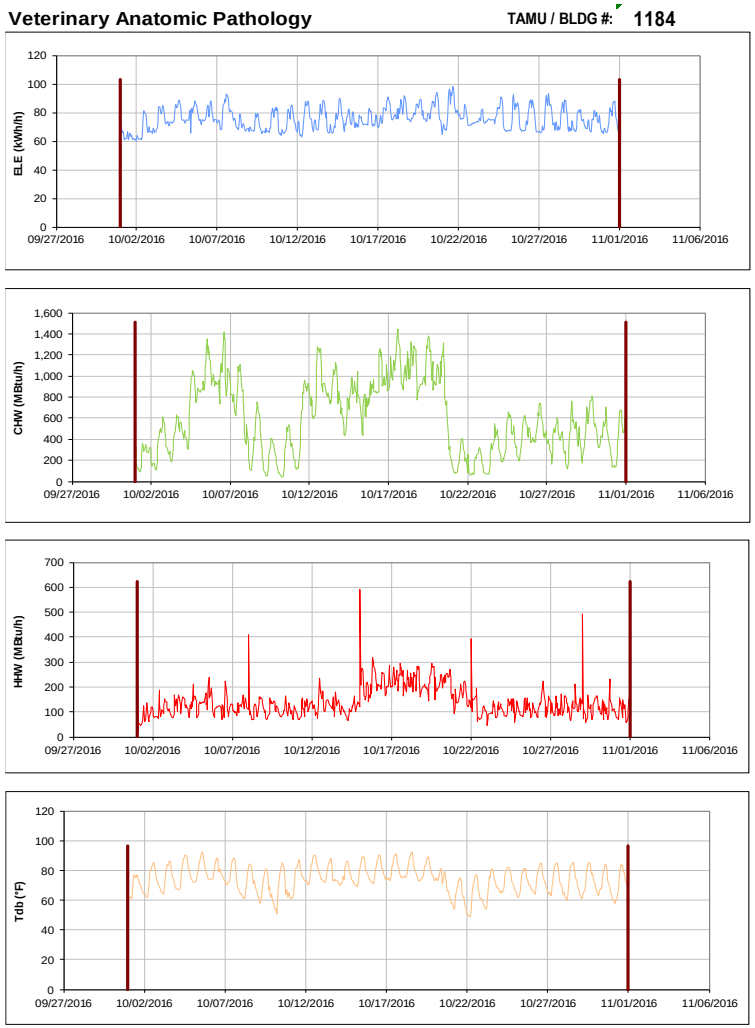


Figure III-132 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Veterinary Anatomic Pathology during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-133 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Veterinary Large Animal Hospital during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

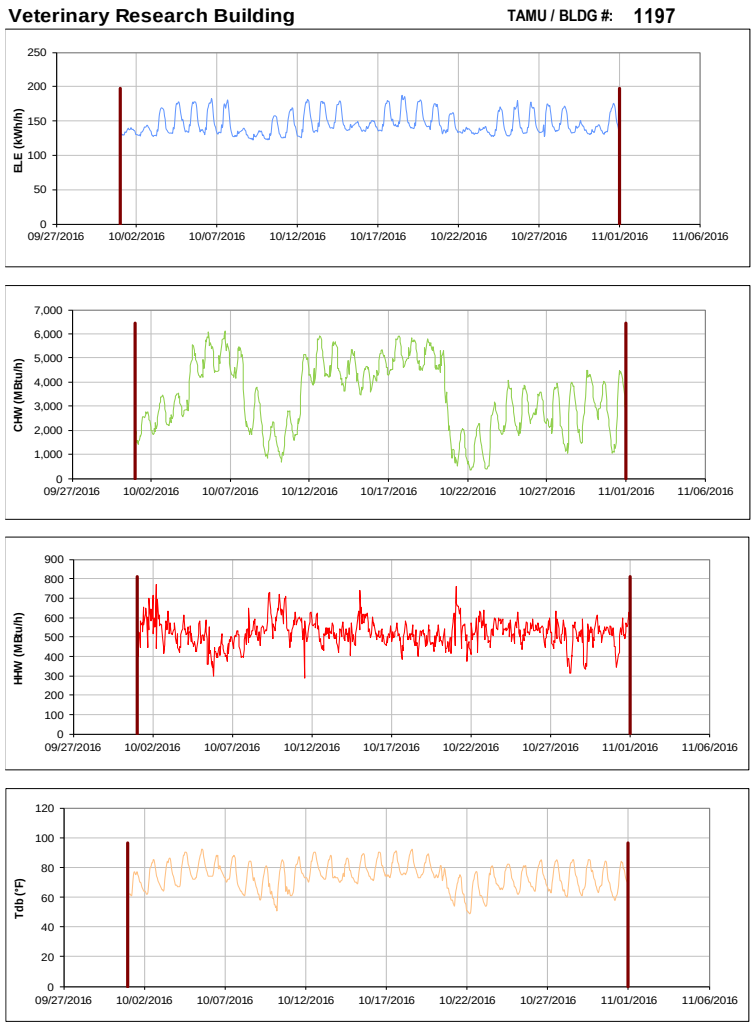


Figure III-134 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Veterinary Research Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

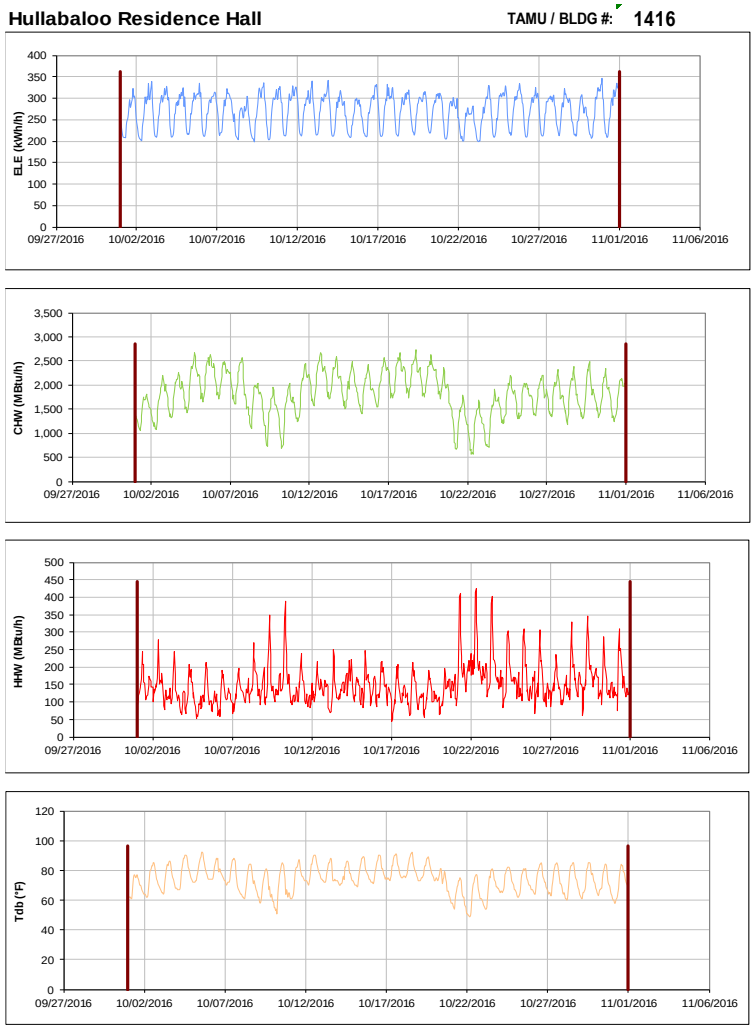


Figure III-135 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Hullabaloo Residence Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

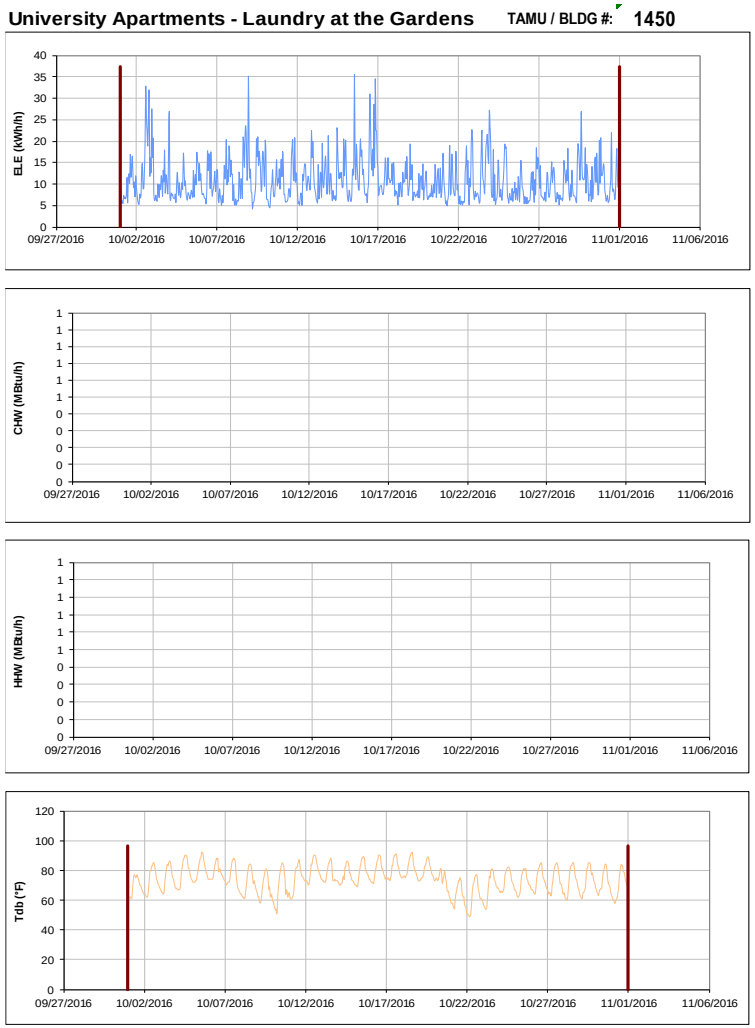


Figure III-136 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - Laundry at the Gardens during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

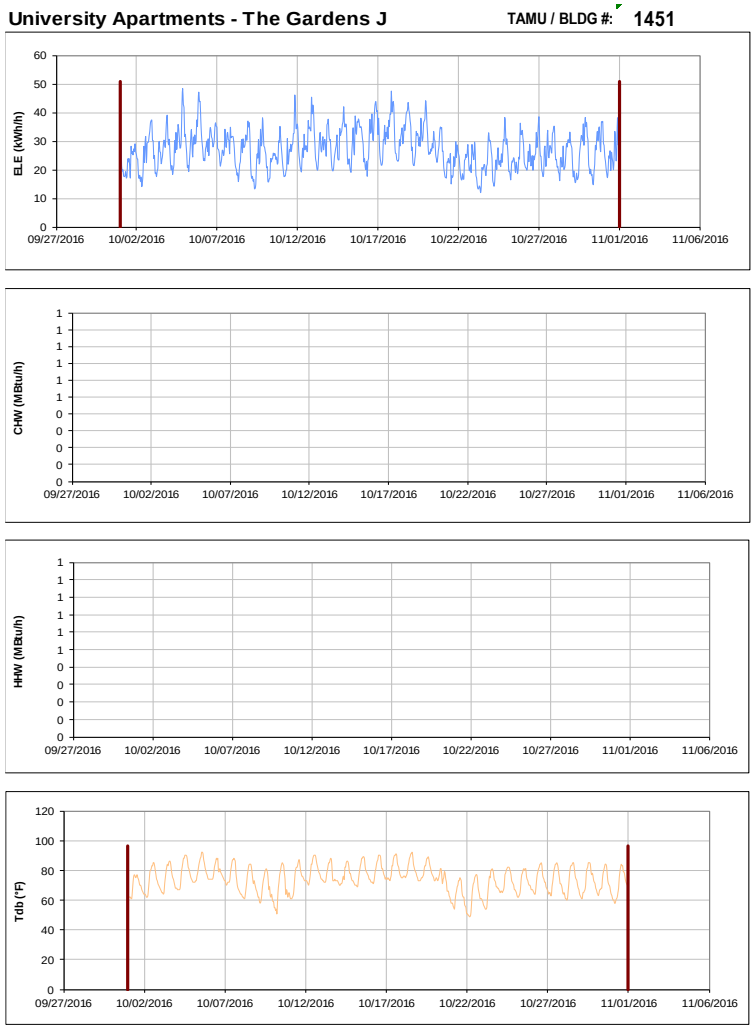


Figure III-137 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens J during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

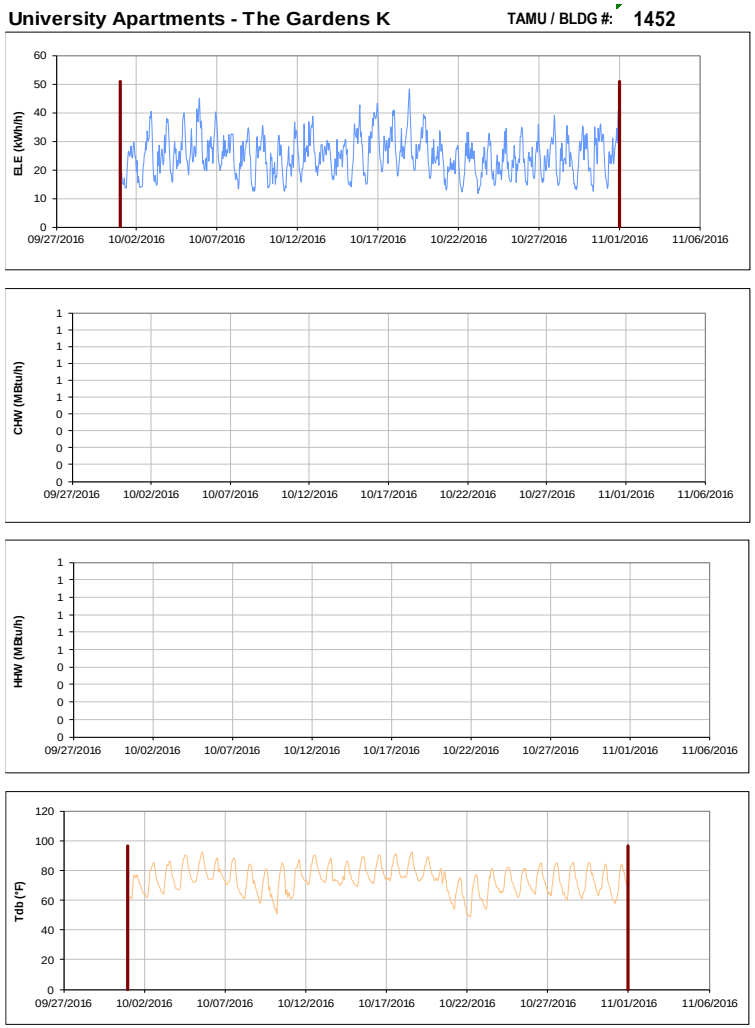


Figure III-138 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens K during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

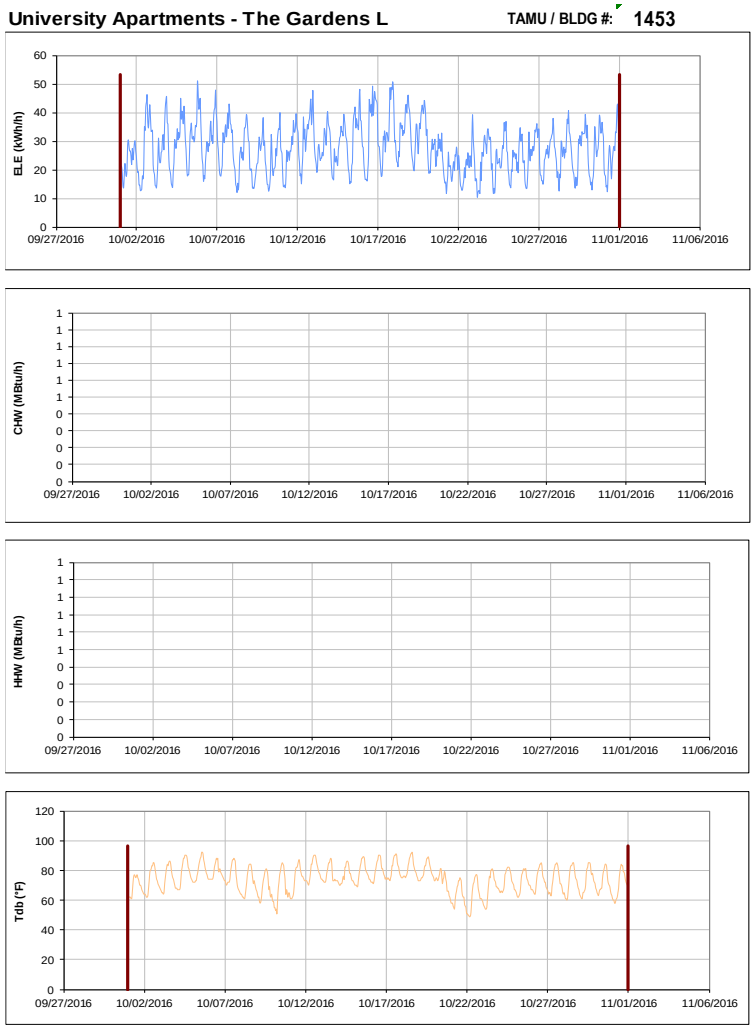


Figure III-139 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens L during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

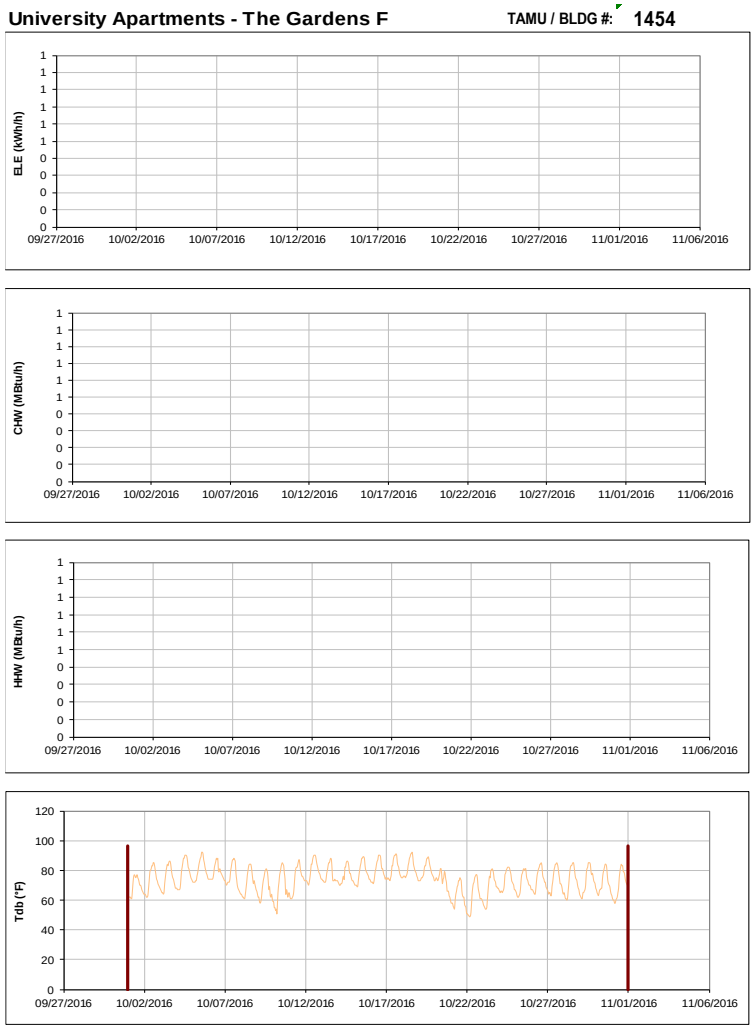


Figure III-140 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens F during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

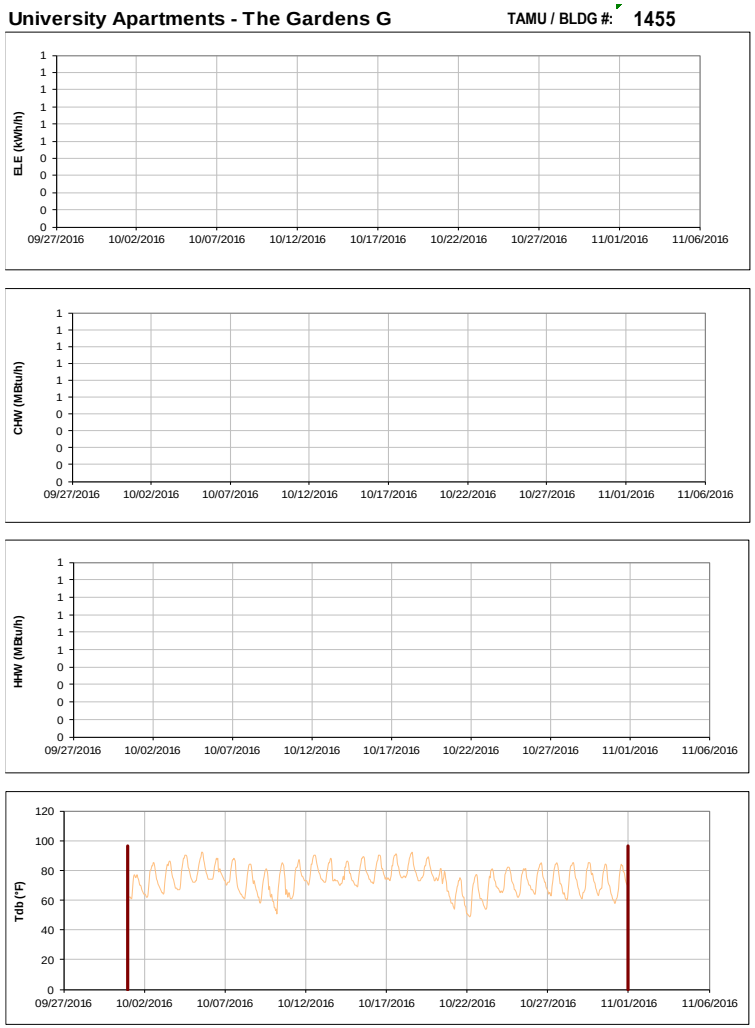


Figure III-141 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens G during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

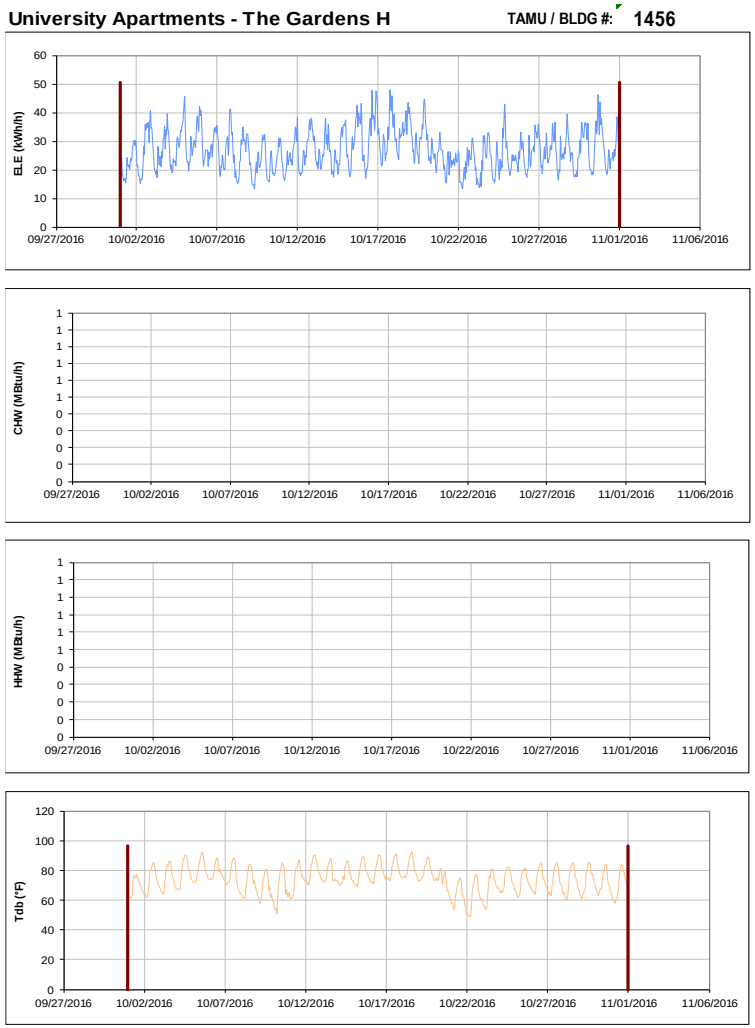


Figure III-142 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens H during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

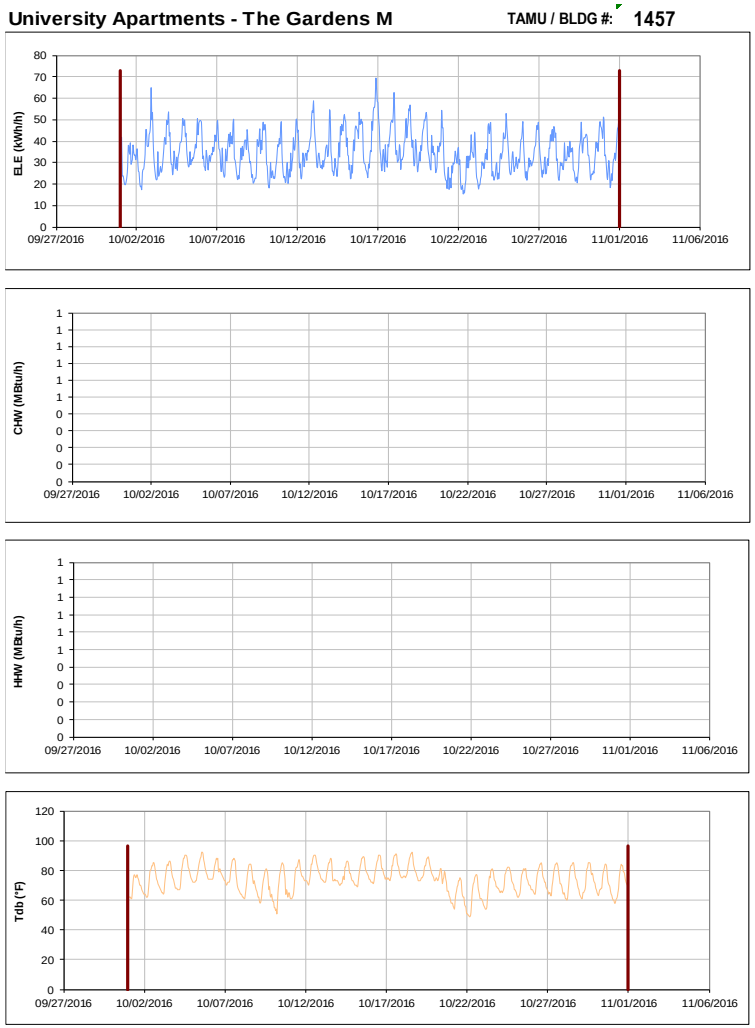


Figure III-143 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens M during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

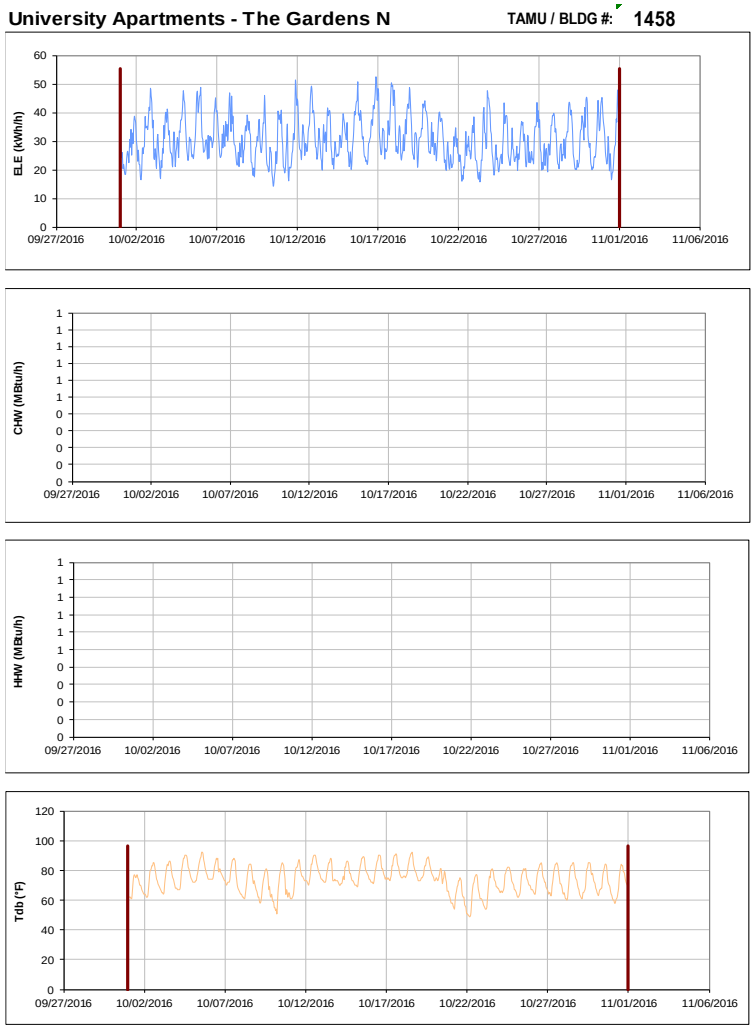


Figure III-144 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens N during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

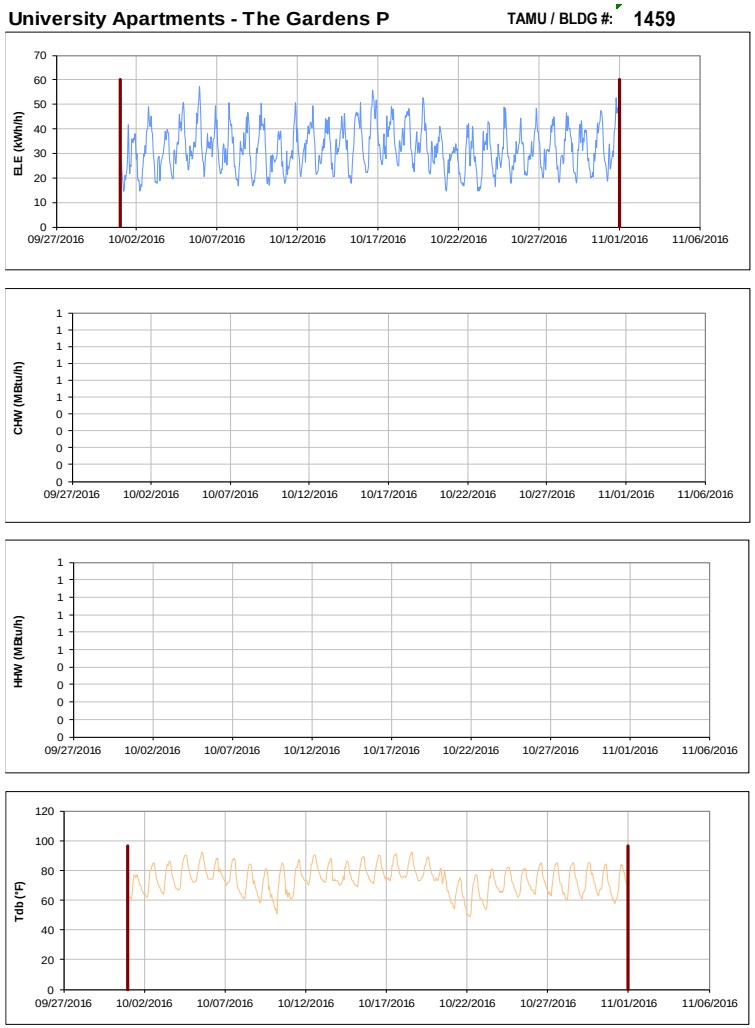


Figure III-145 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens P during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

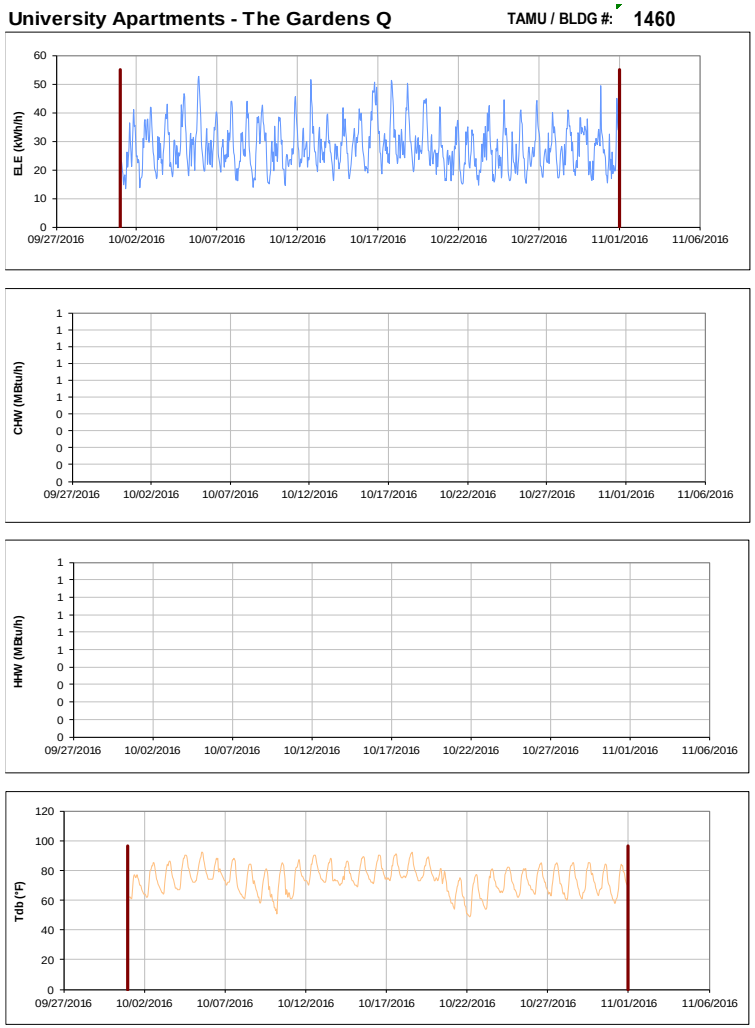


Figure III-146 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for University Apartments - The Gardens Q during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

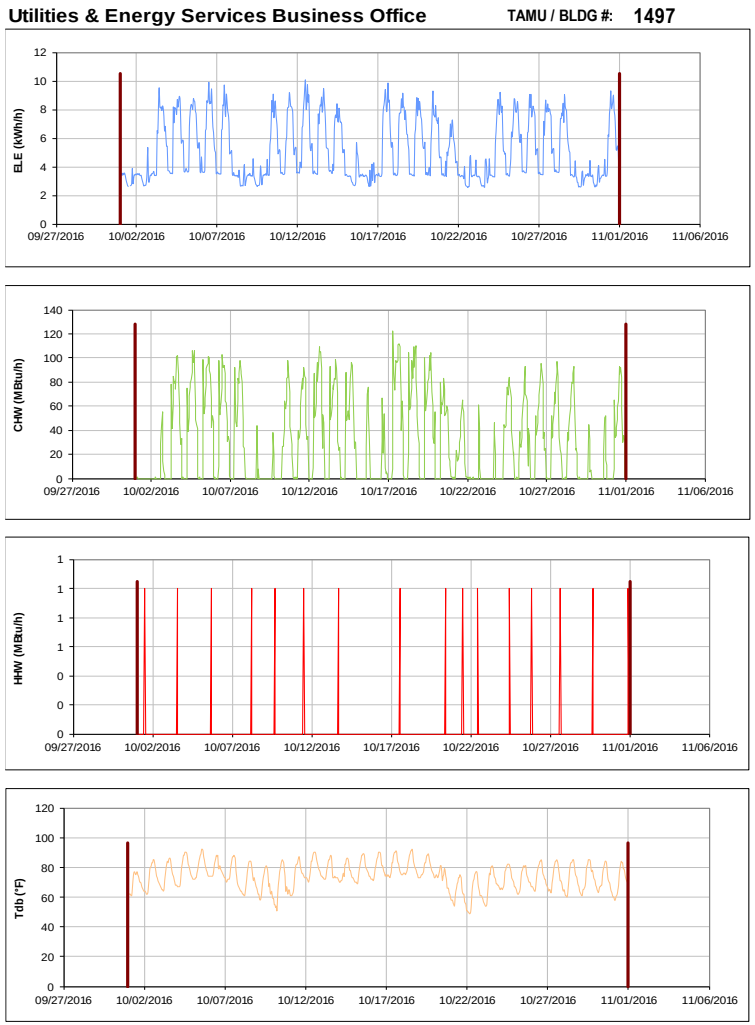


Figure III-147 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Utilities & Energy Services Business Office during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

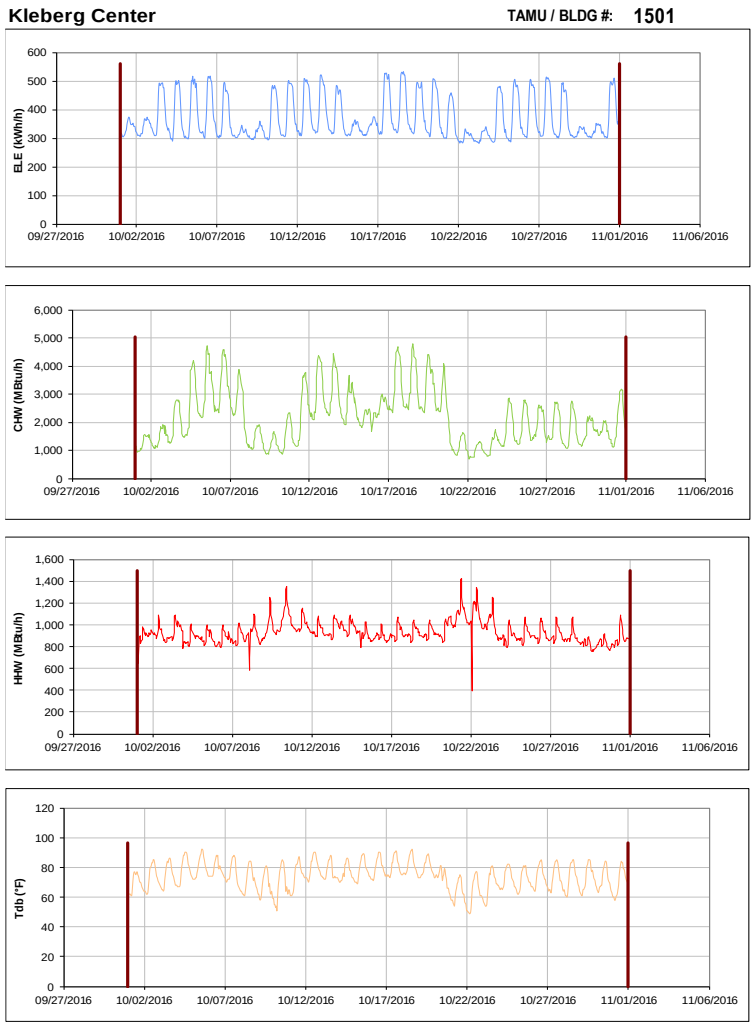


Figure III-148 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Kleberg Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

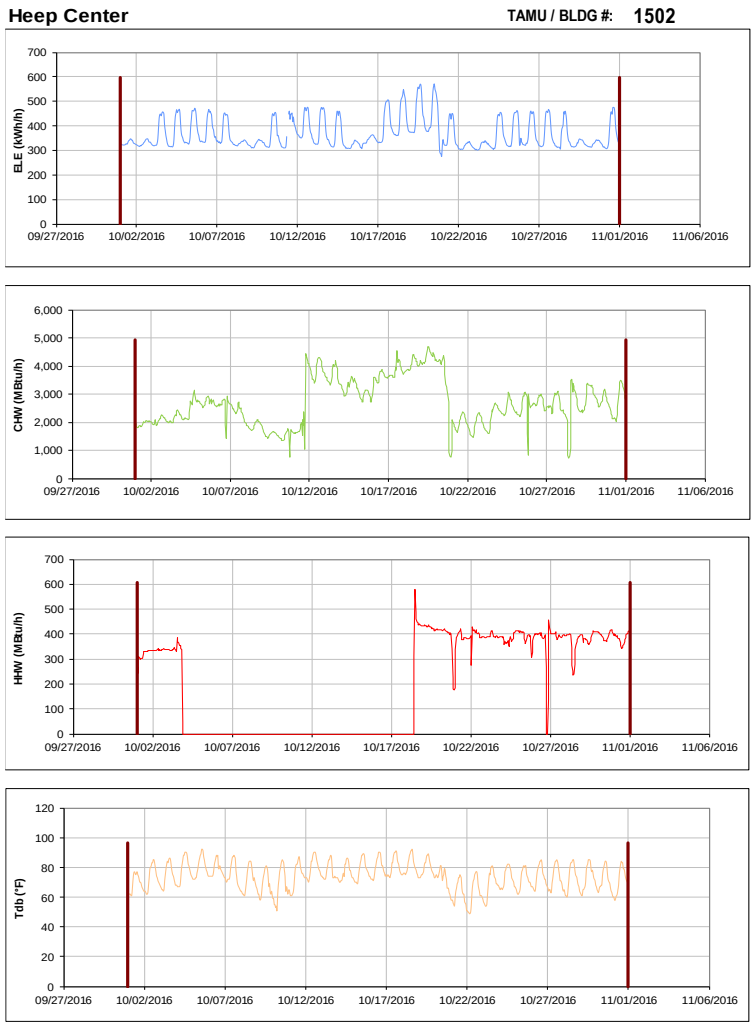


Figure III-149 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Heep Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-150 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Cater-Mattil Hall during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

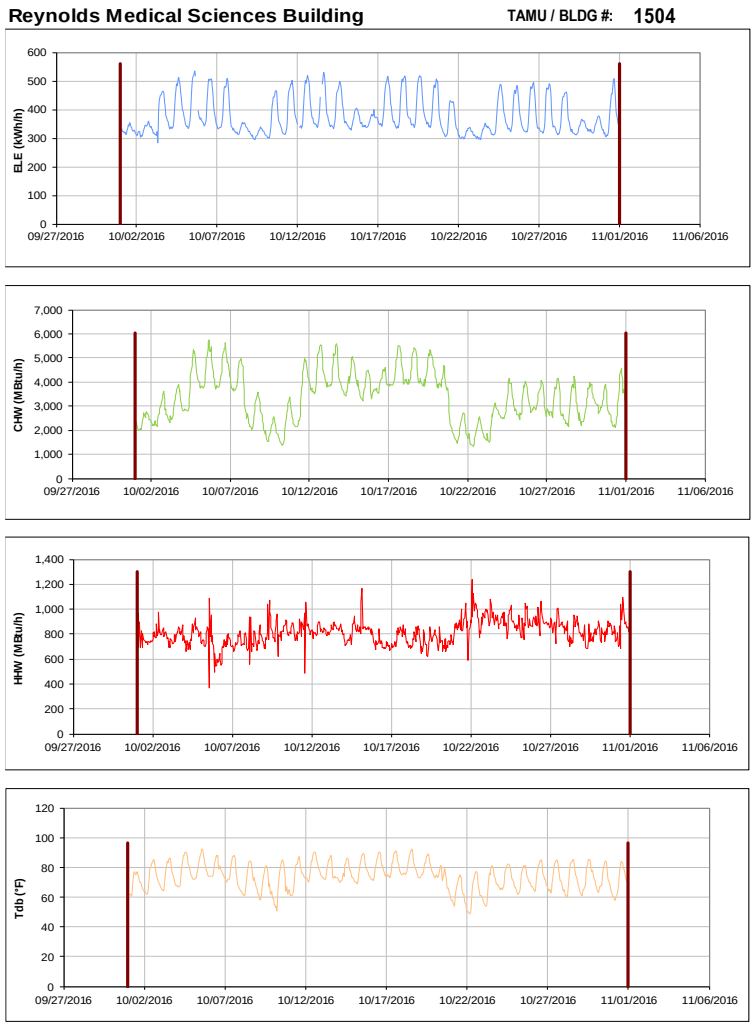


Figure III-151 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Reynolds Medical Sciences Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

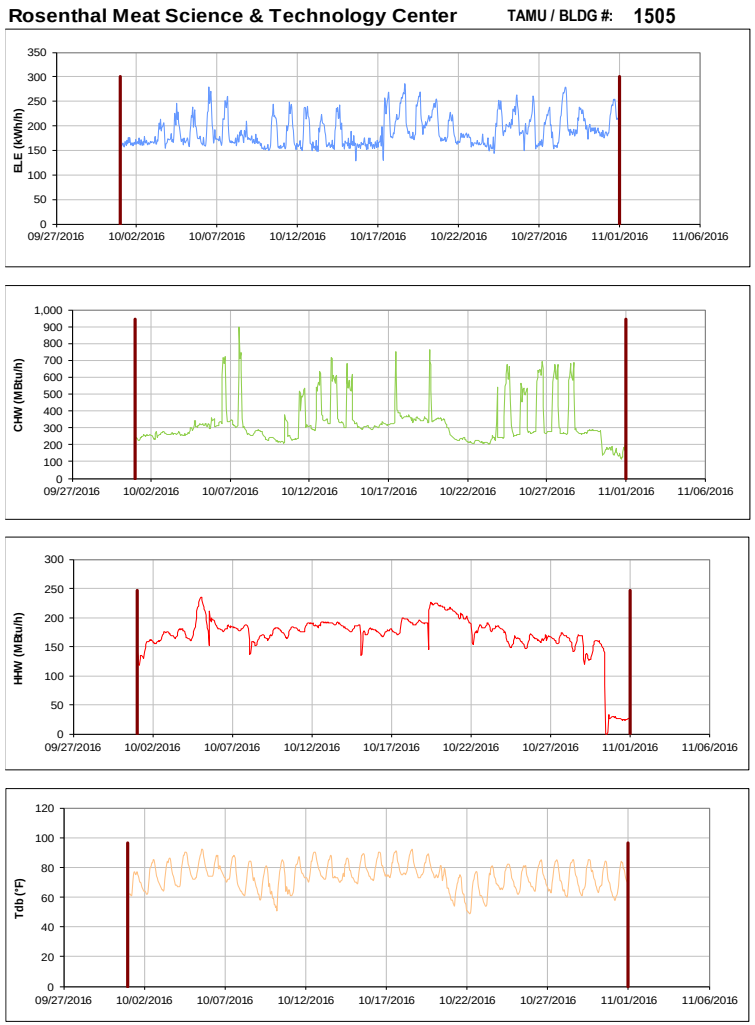


Figure III-152 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Rosenthal Meat Science & Technology Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

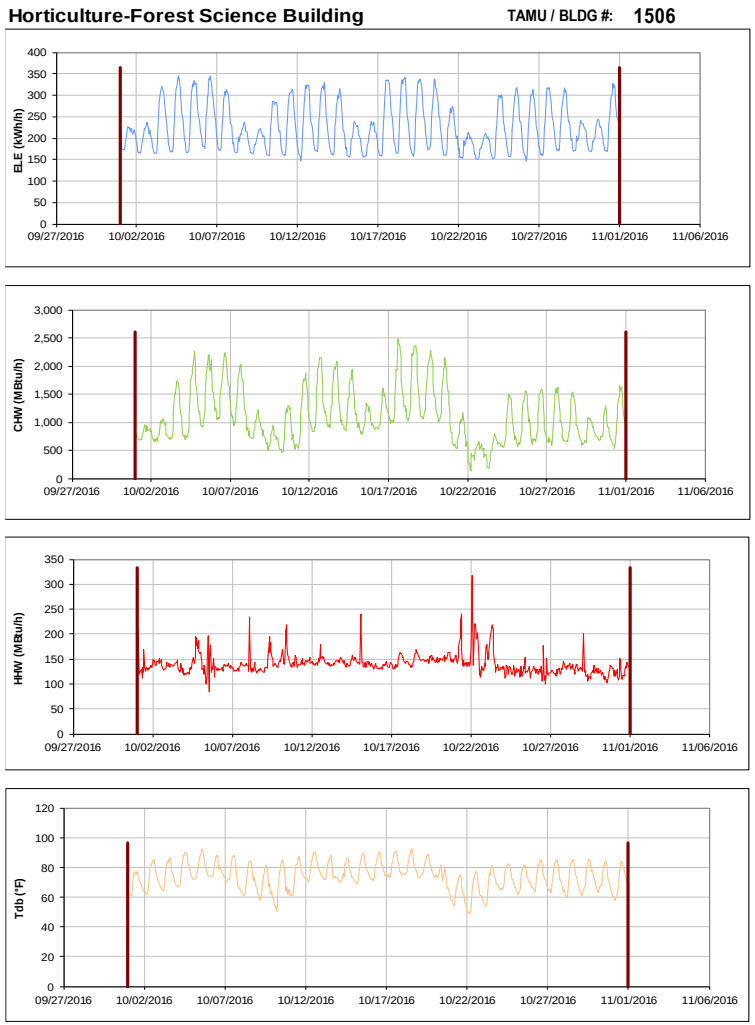


Figure III-153 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Horticulture-Forest Science Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

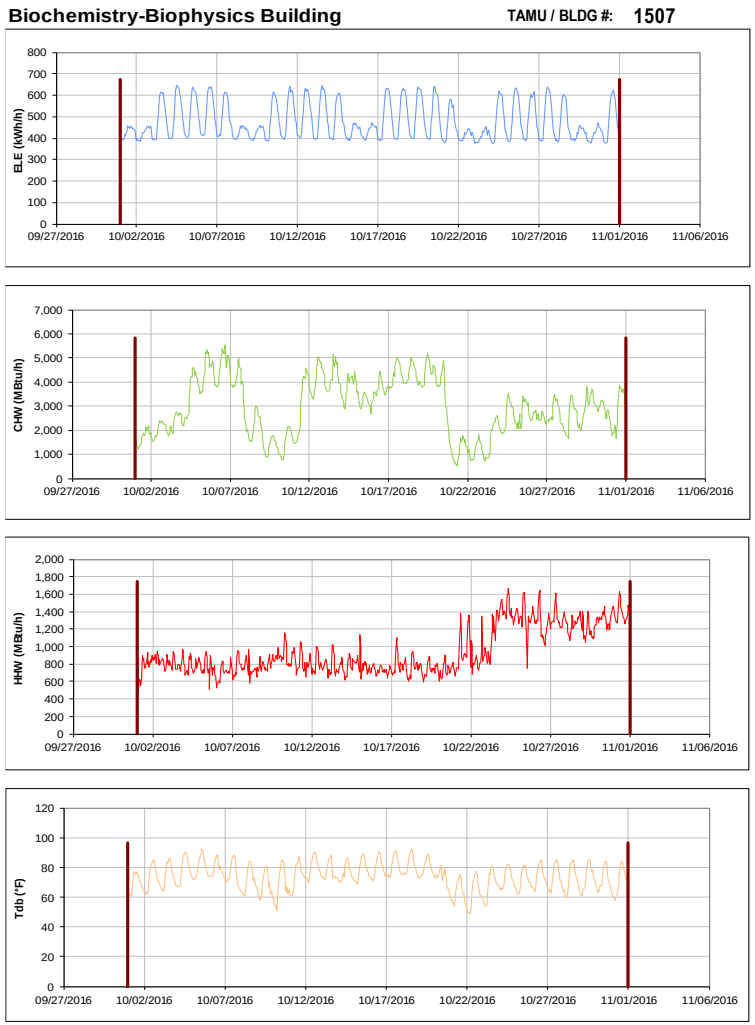


Figure III-154 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Biochemistry-Biophysics Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

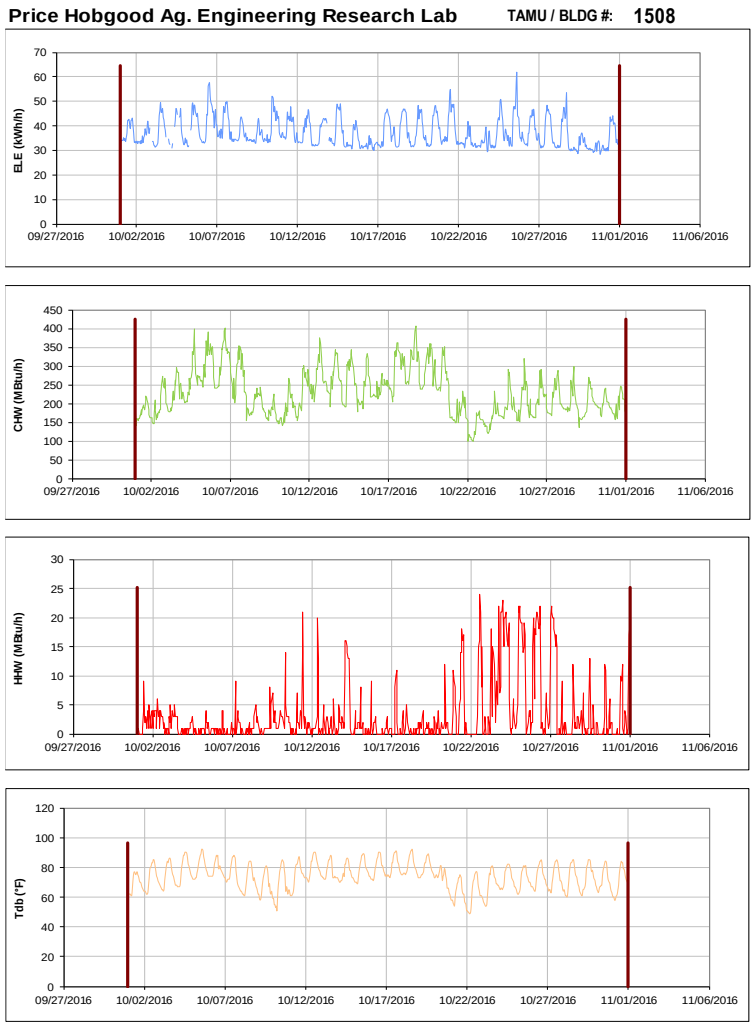


Figure III-155 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Price Hobgood Ag. Engineering Research Lab during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

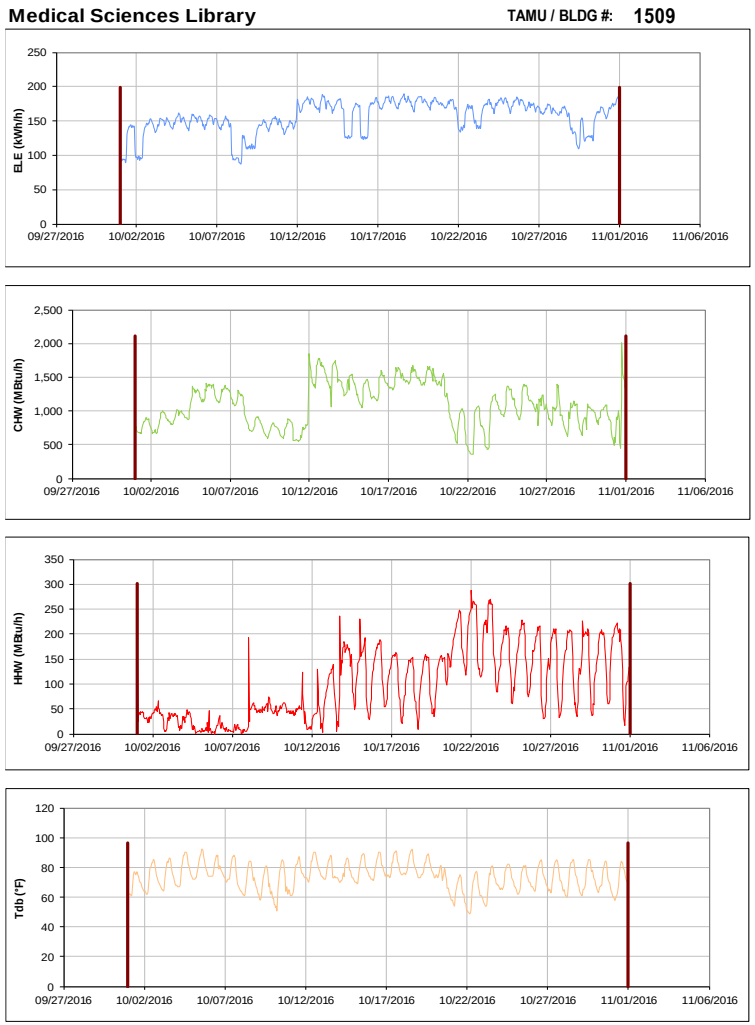


Figure III-156 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Medical Sciences Library during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

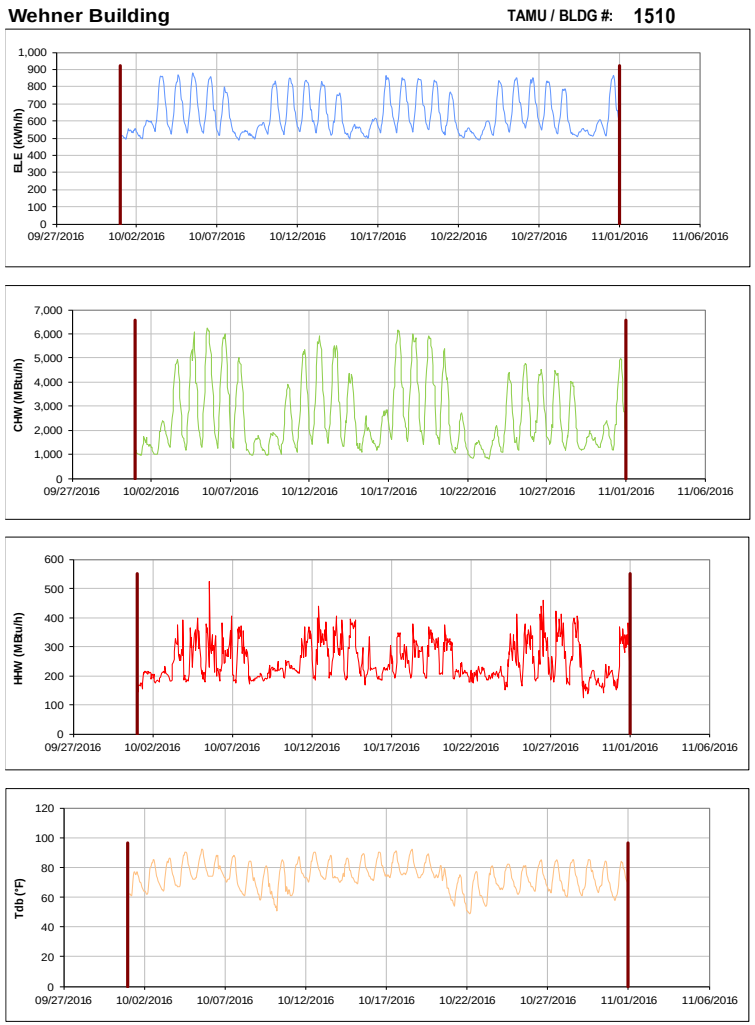


Figure III-157 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Wehner Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-158 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for West Campus Library Facility during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

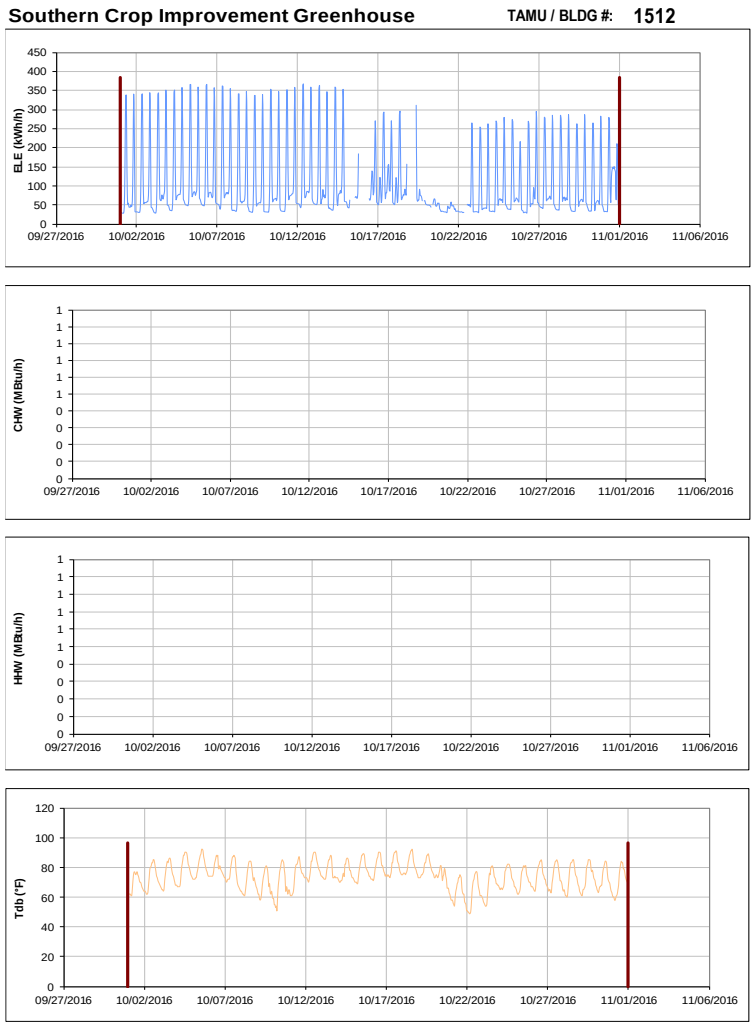


Figure III-159 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Southern Crop Improvement Greenhouse during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

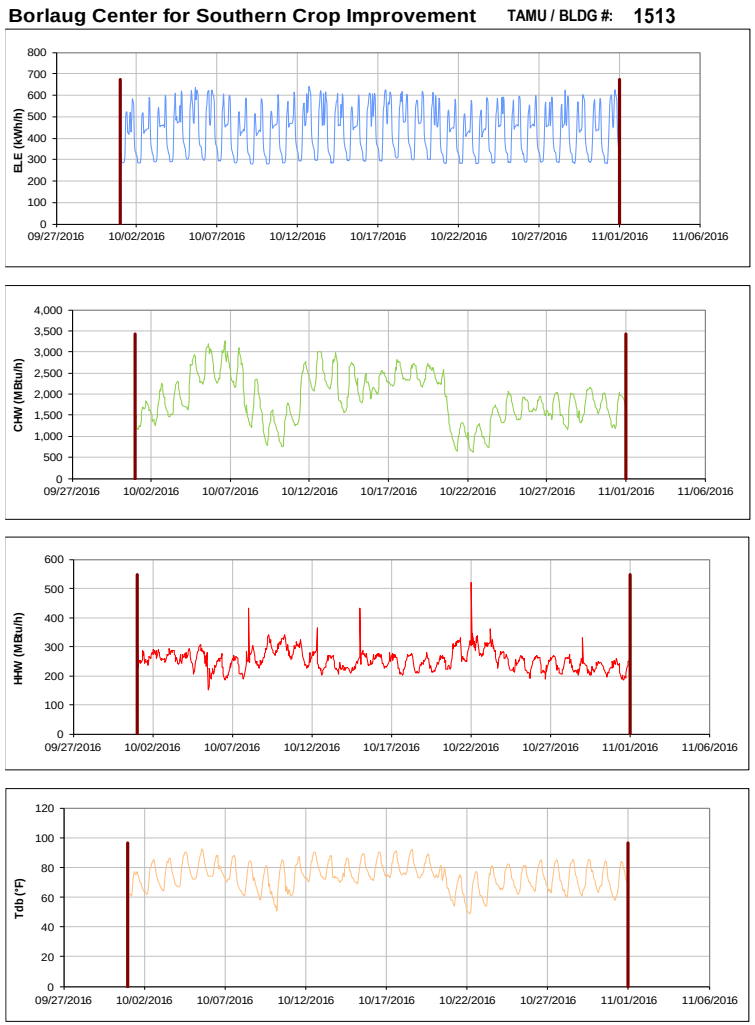


Figure III-160 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Borlaug Center for Southern Crop Improvement during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

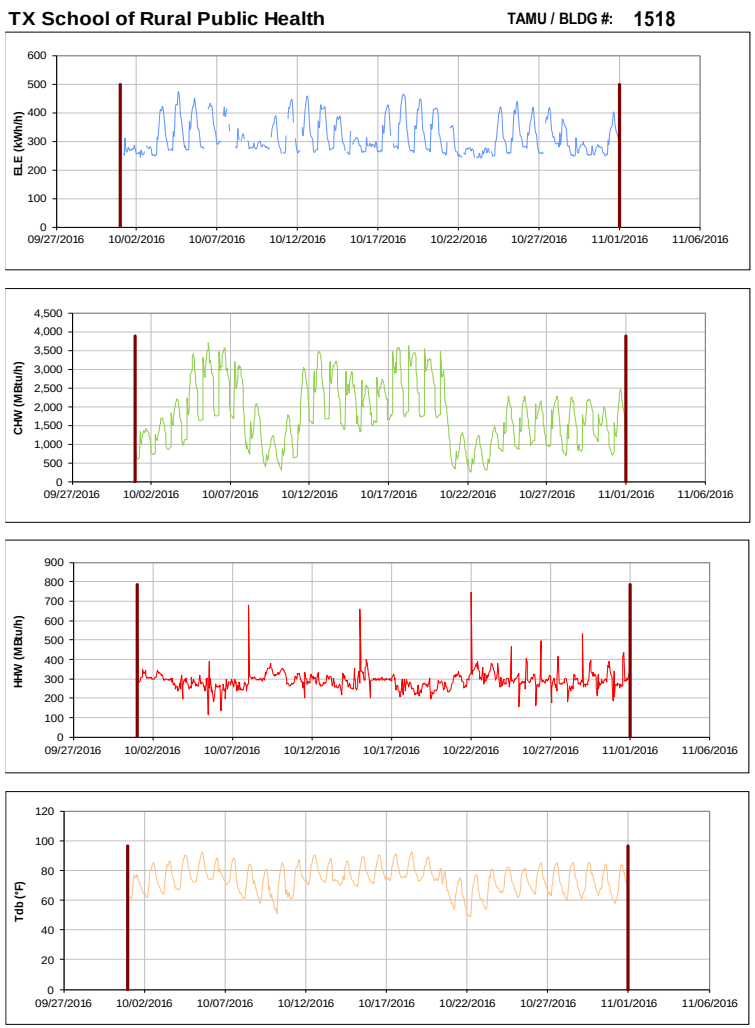


Figure III-161 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for TX School of Rural Public Health during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

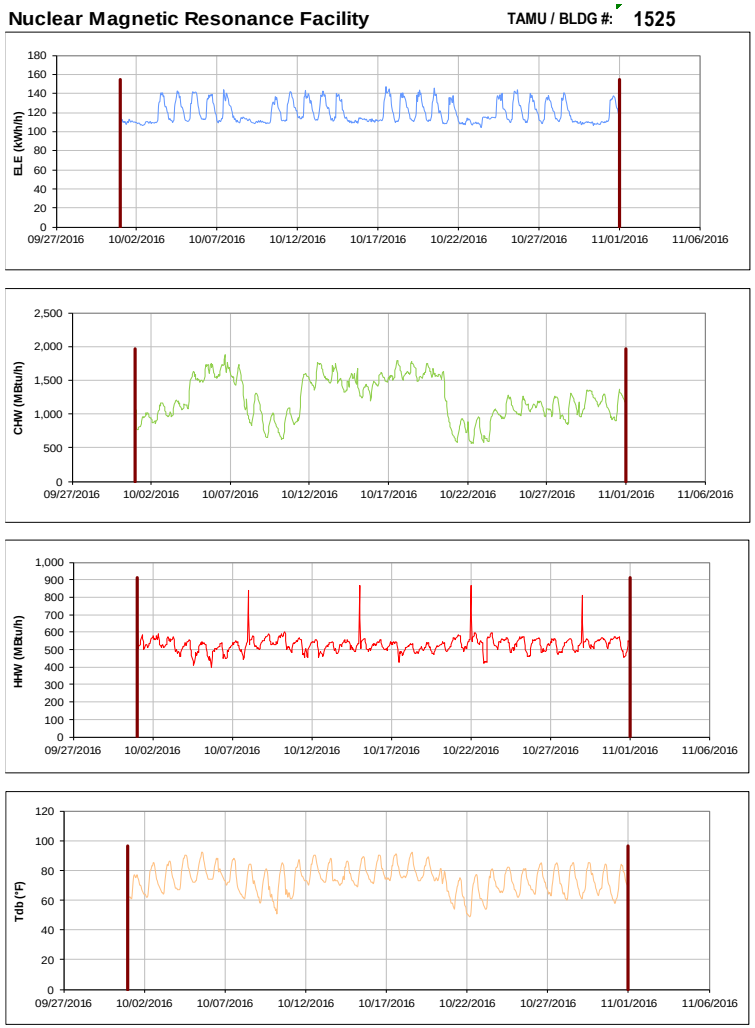


Figure III-162 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Nuclear Magnetic Resonance Facility during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-163 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Interdisciplinary Life Sciences Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

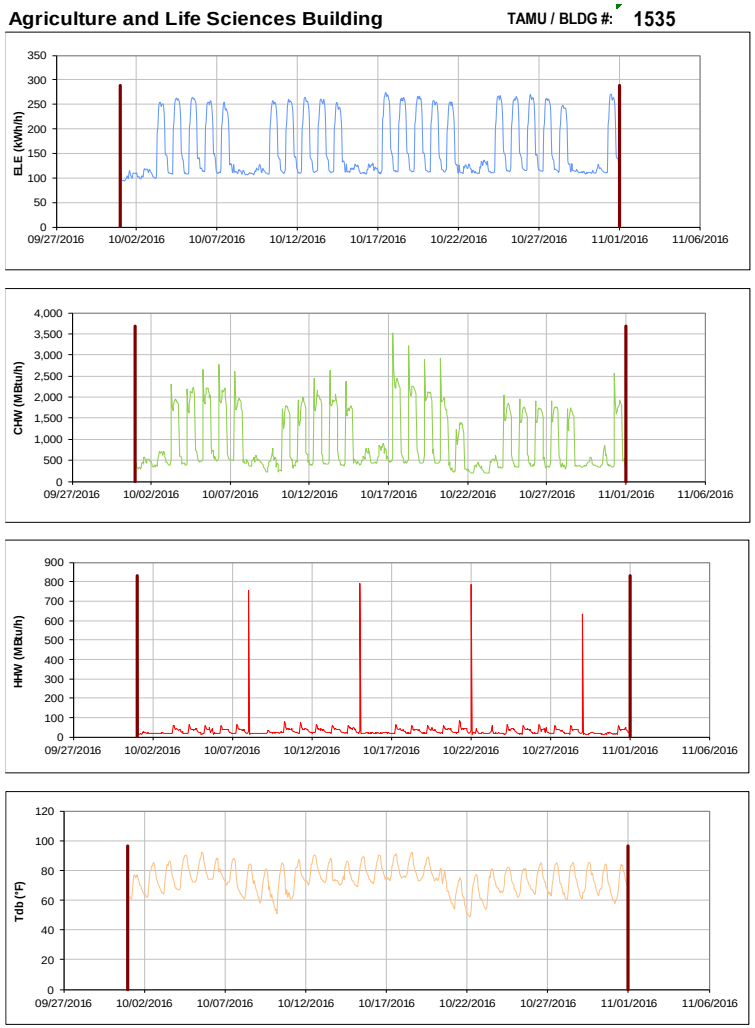


Figure III-164 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Agriculture and Life Sciences Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

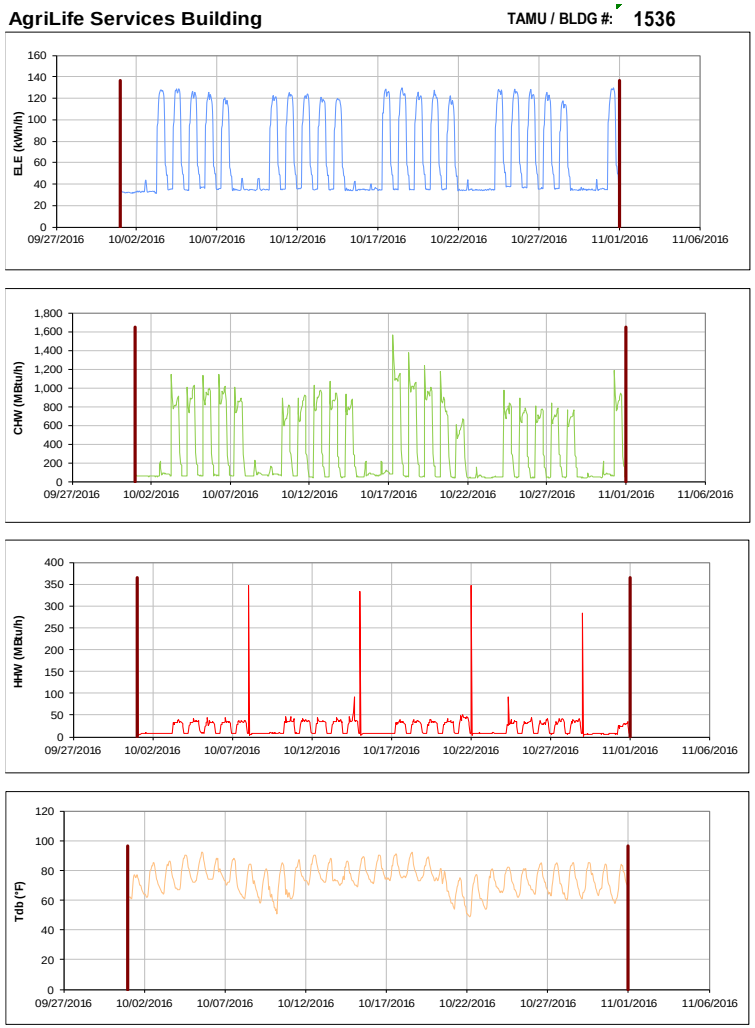


Figure III-165 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for AgriLife Services Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-166 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Agriculture Program Visitors Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

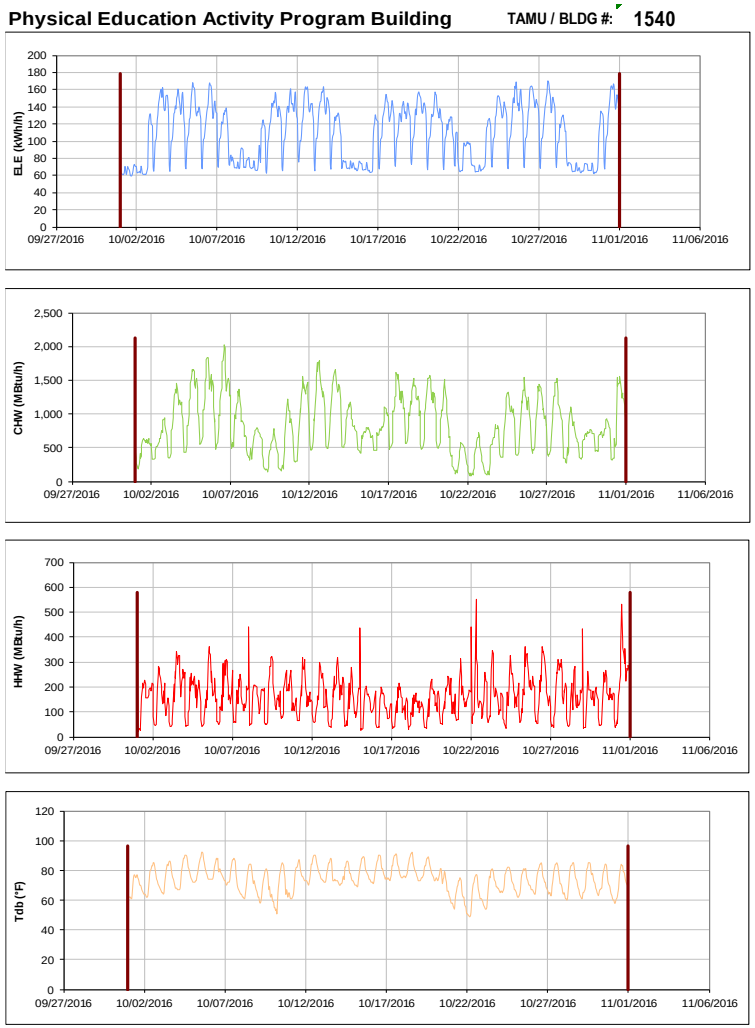


Figure III-167 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Physical Education Activity Program Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

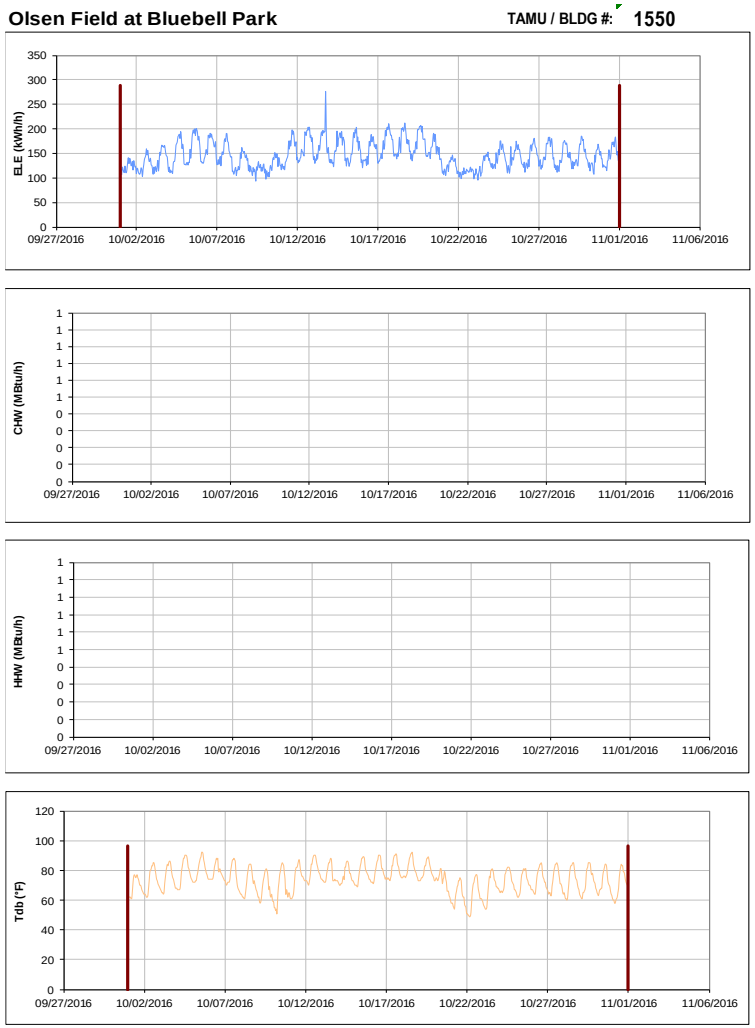


Figure III-168 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Olsen Field at Bluebell Park during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

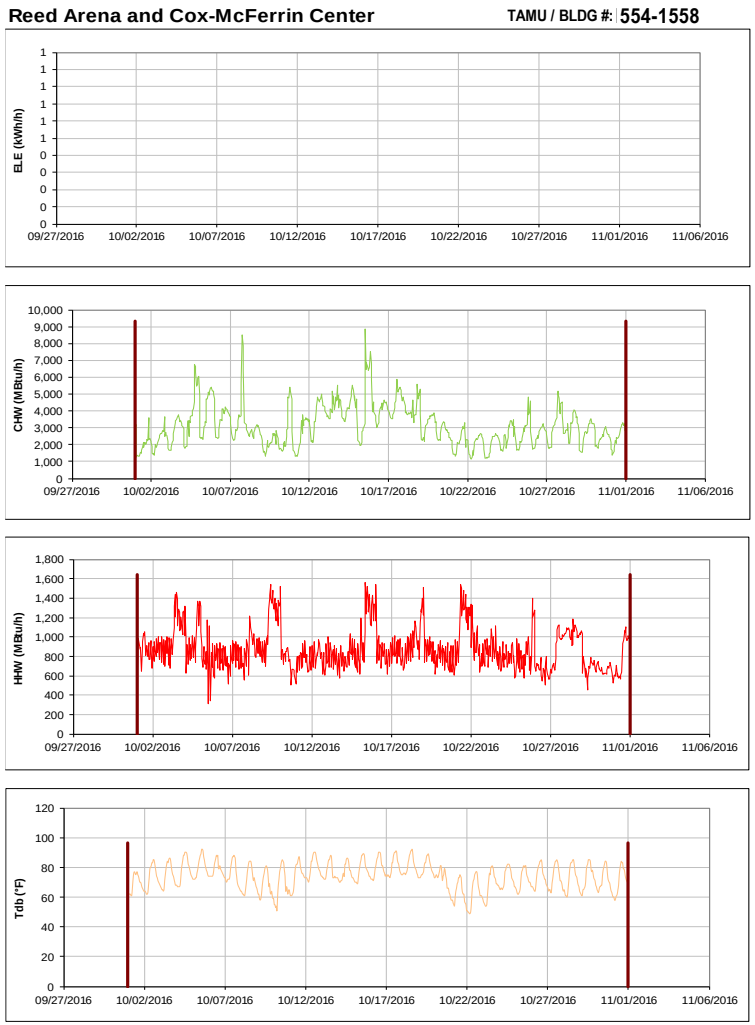


Figure III-169 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Reed Arena and Cox-McFerrin Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

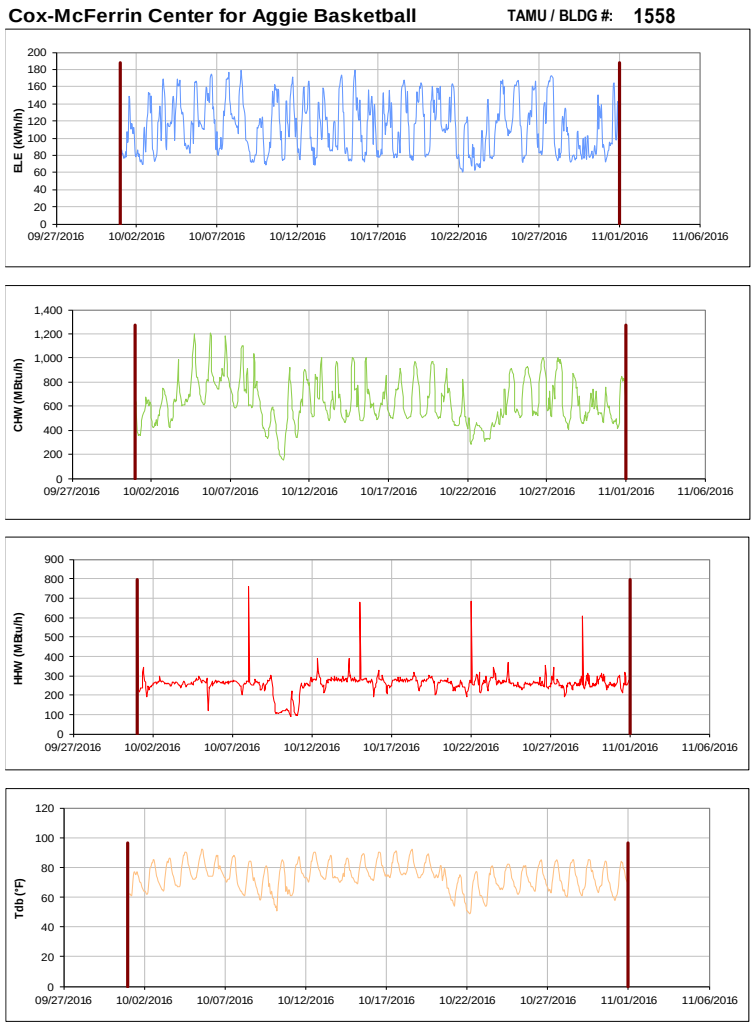


Figure III-170 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Cox-McFerrin Center for Aggie Basketball during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

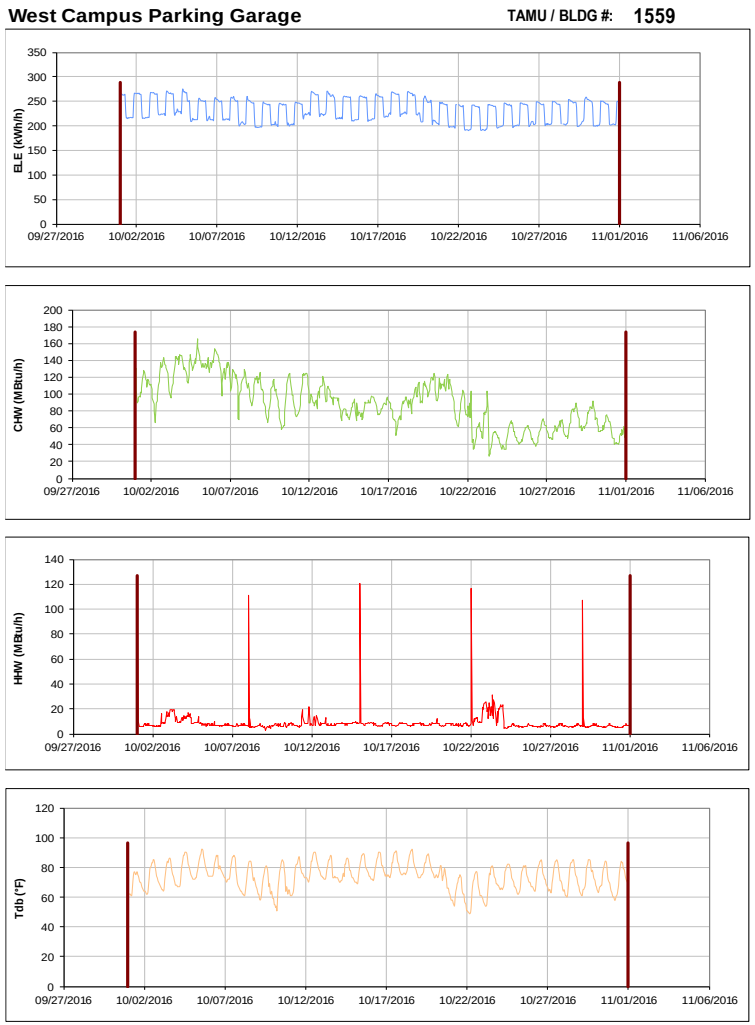


Figure III-171 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for West Campus Parking Garage during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

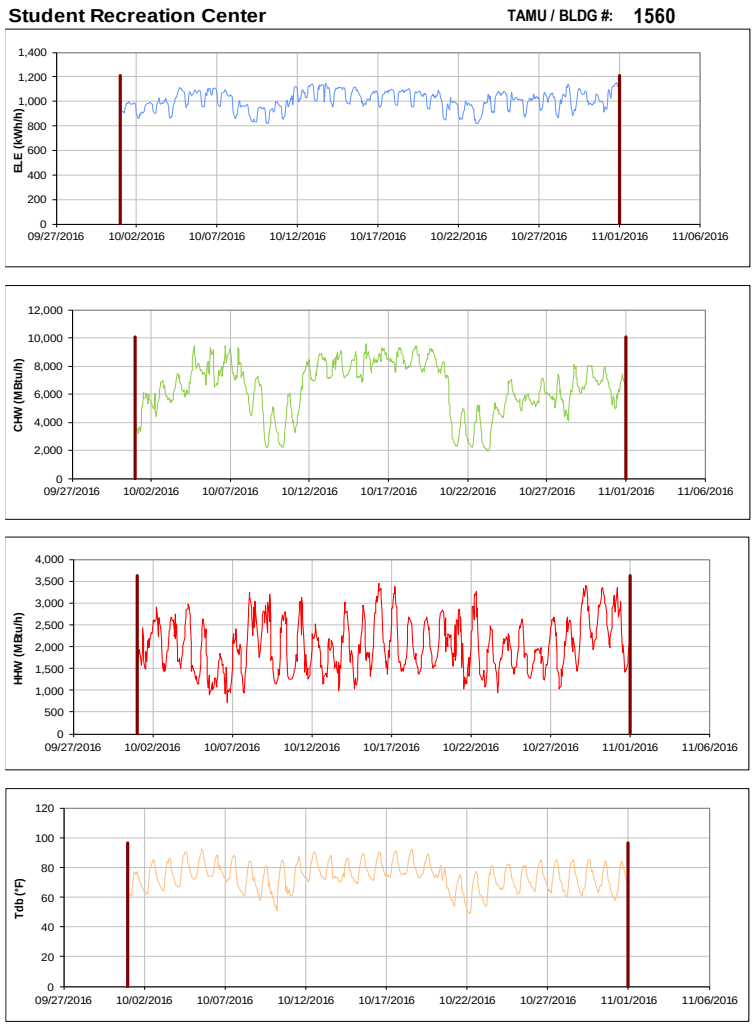


Figure III-172 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Student Recreation Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

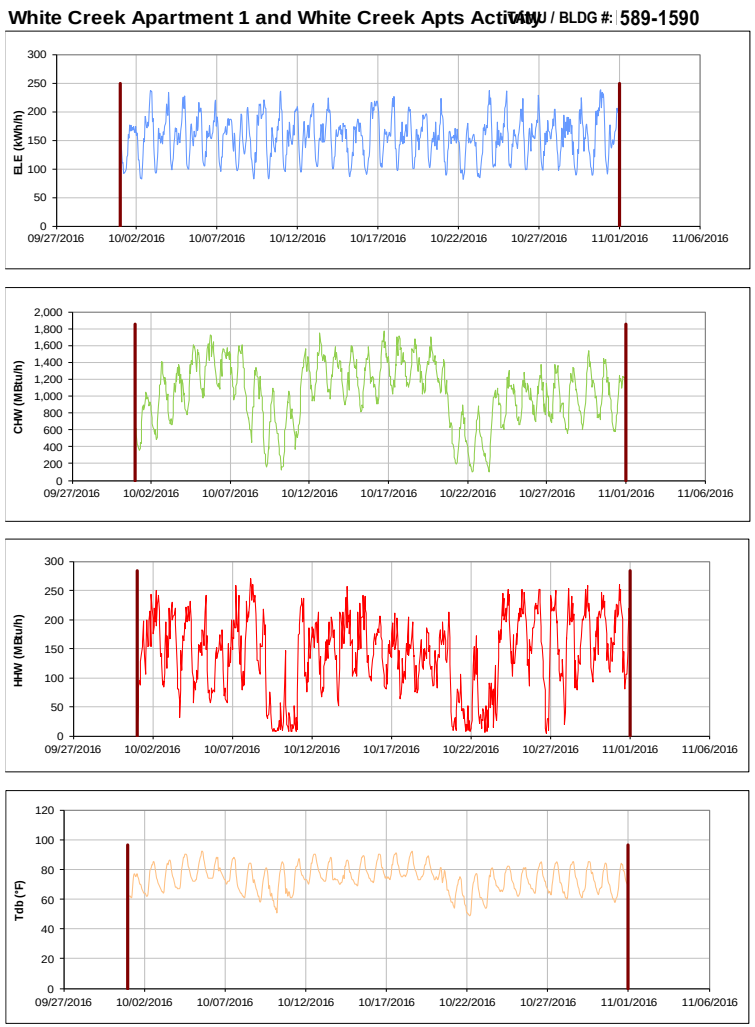


Figure III-173 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for White Creek Apartment 1 and White Creek Apts Activity Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station,

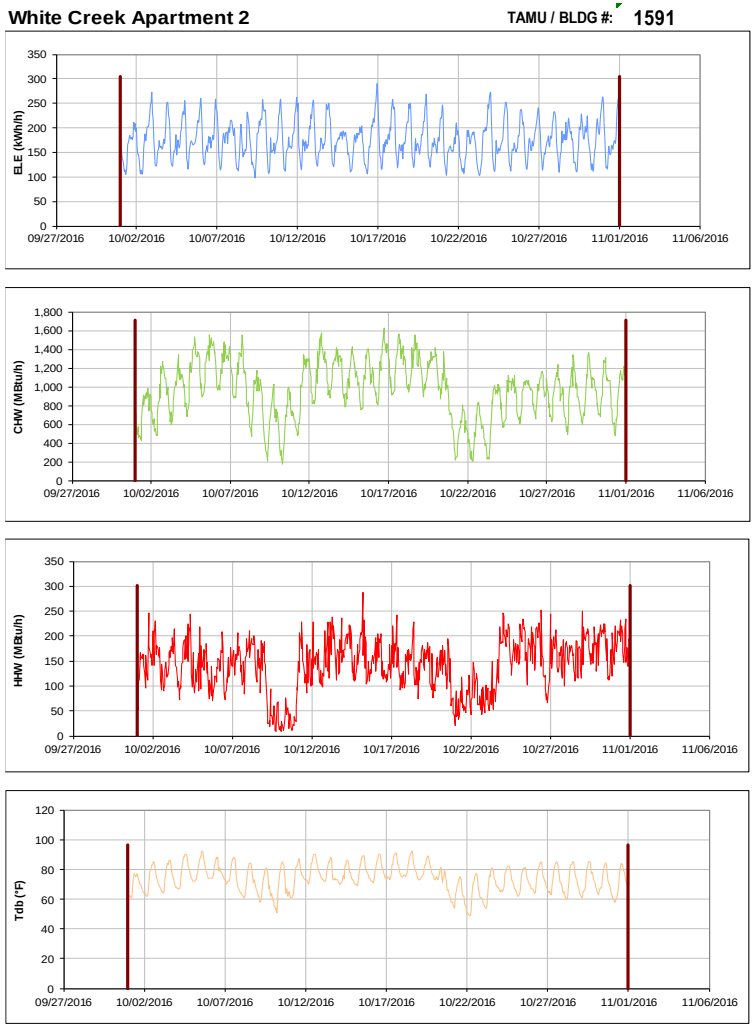


Figure III-174 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for White Creek Apartment 2 during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

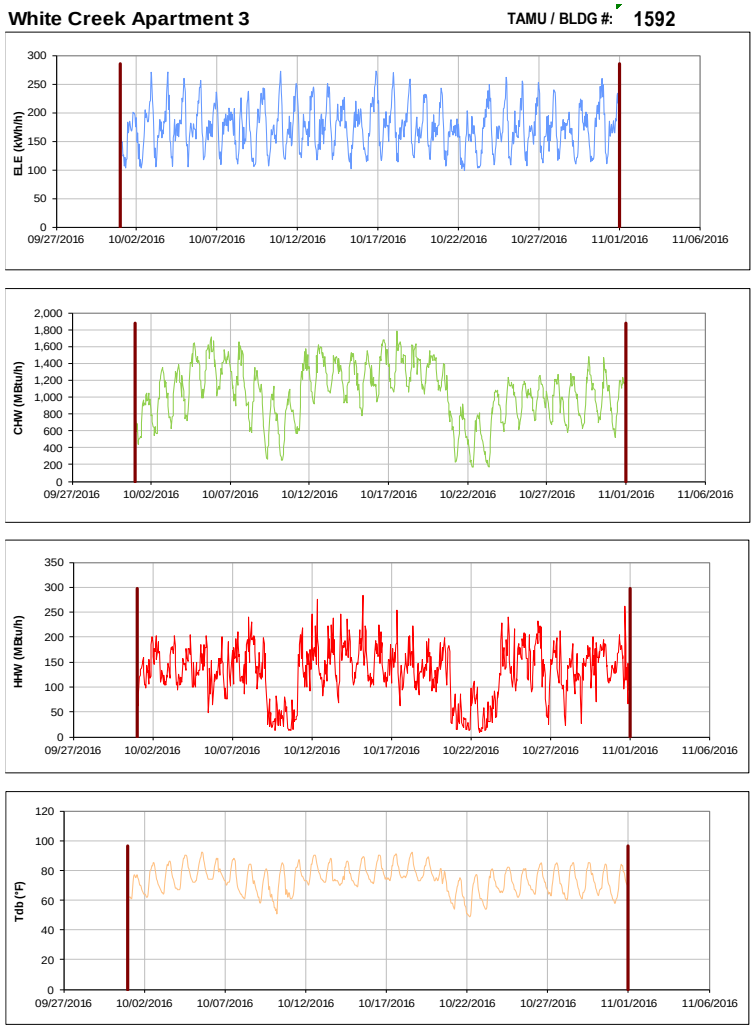


Figure III-175 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for White Creek Apartment 3 during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-176 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Gilchrist TTI Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

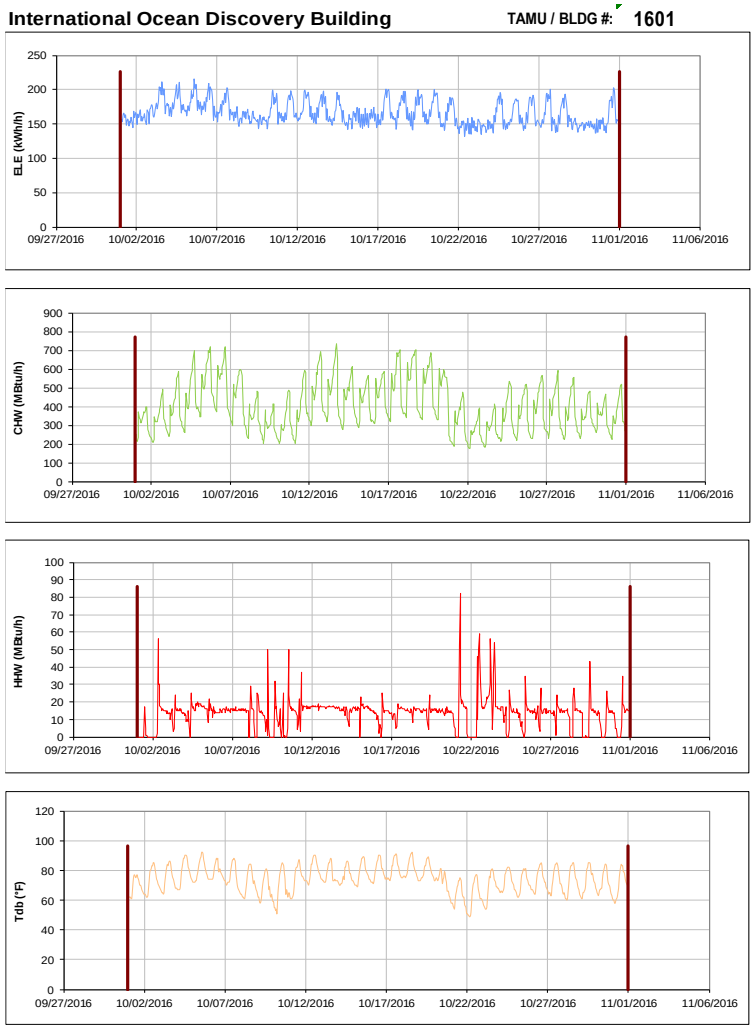


Figure III-177 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for International Ocean Discovery Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

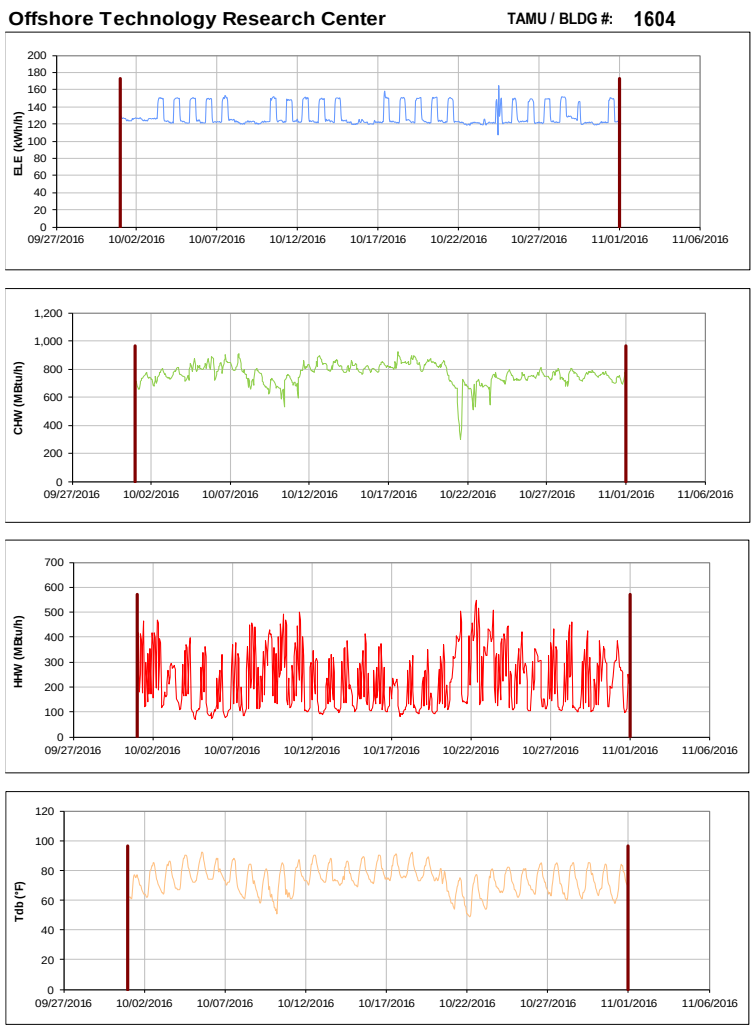


Figure III-178 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Offshore Technology Research Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

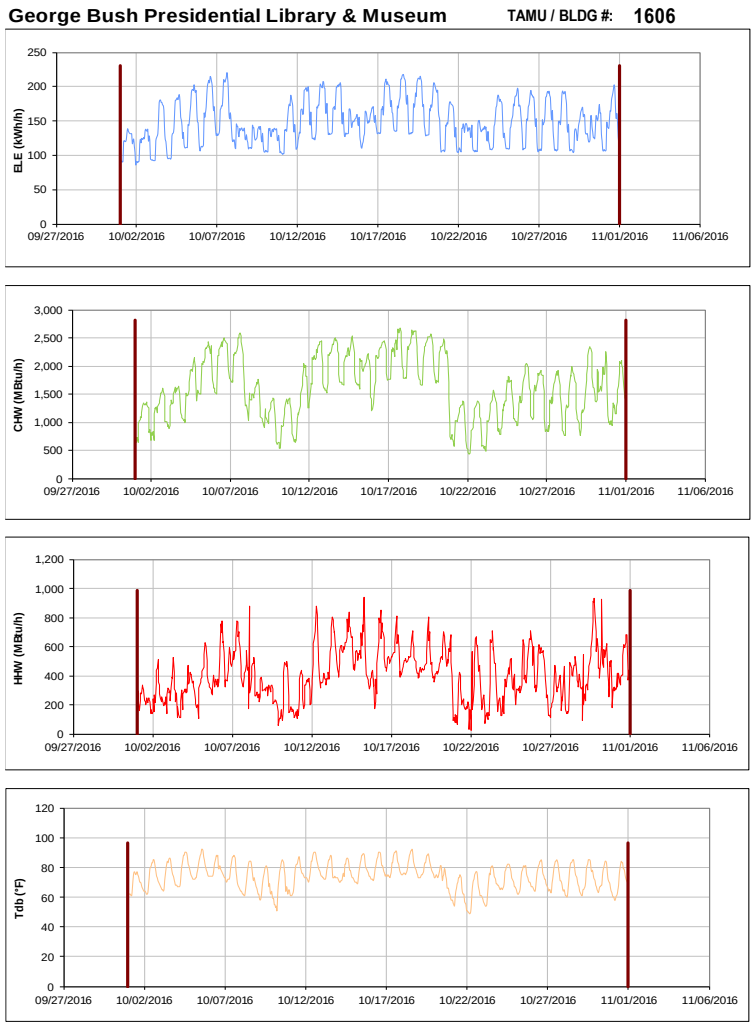


Figure III-179 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for George Bush Presidential Library & Museum during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

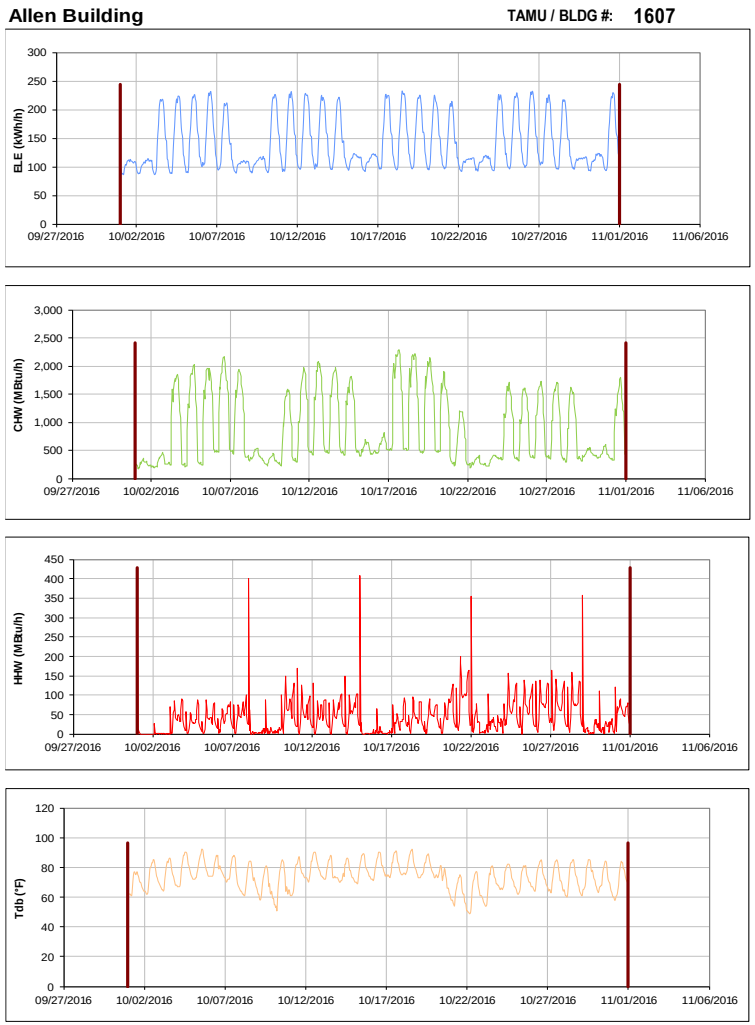


Figure III-180 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Allen Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

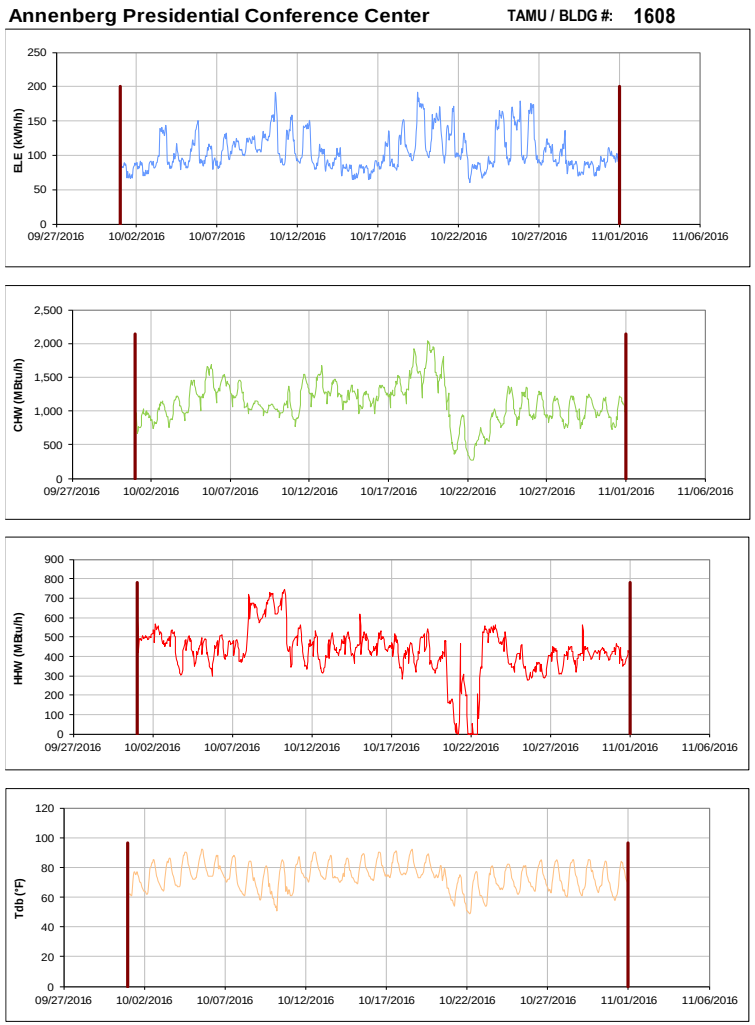


Figure III-181 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Annenberg Presidential Conference Center during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

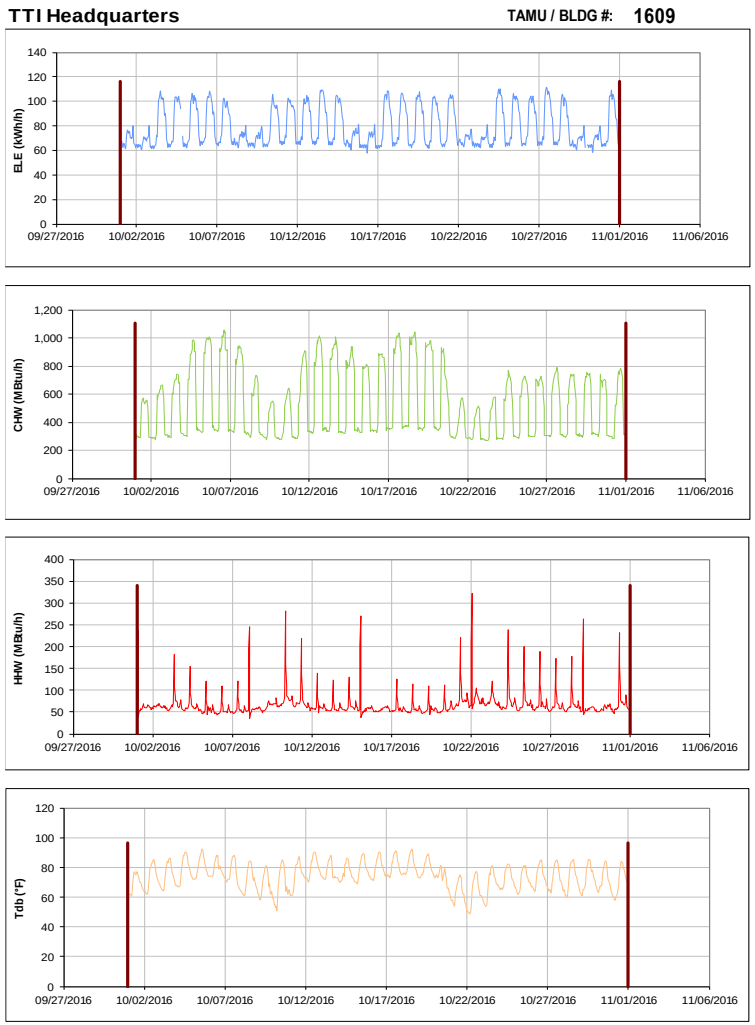


Figure III-182 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for TTI Headquarters during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

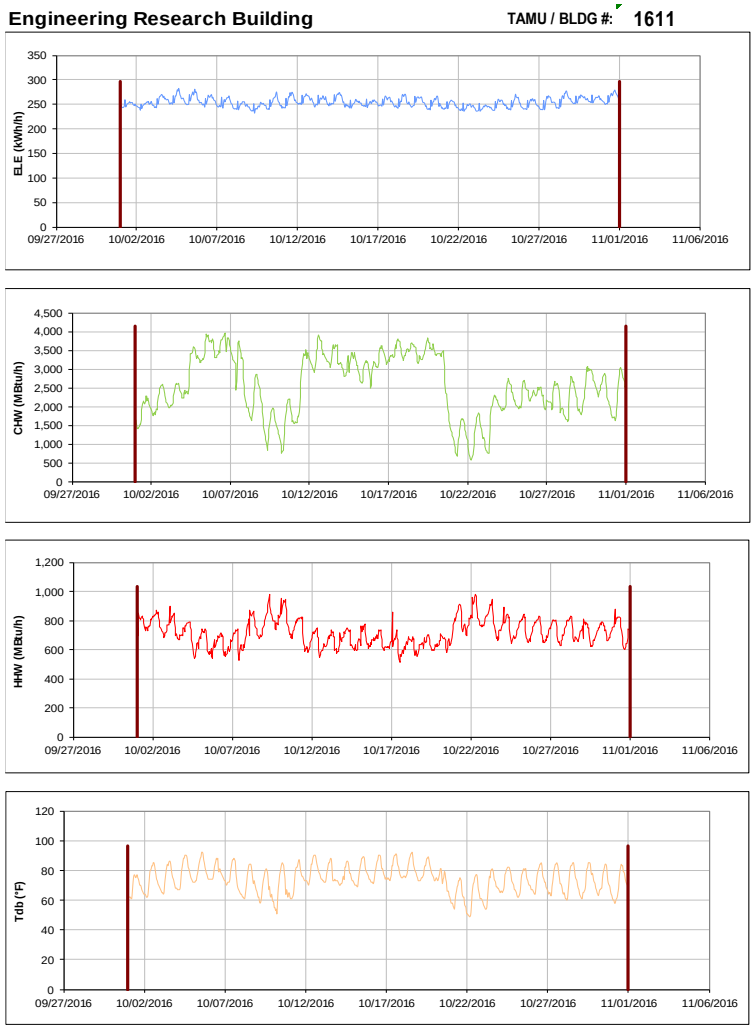


Figure III-183 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Engineering Research Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-184 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for General Services Complex during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

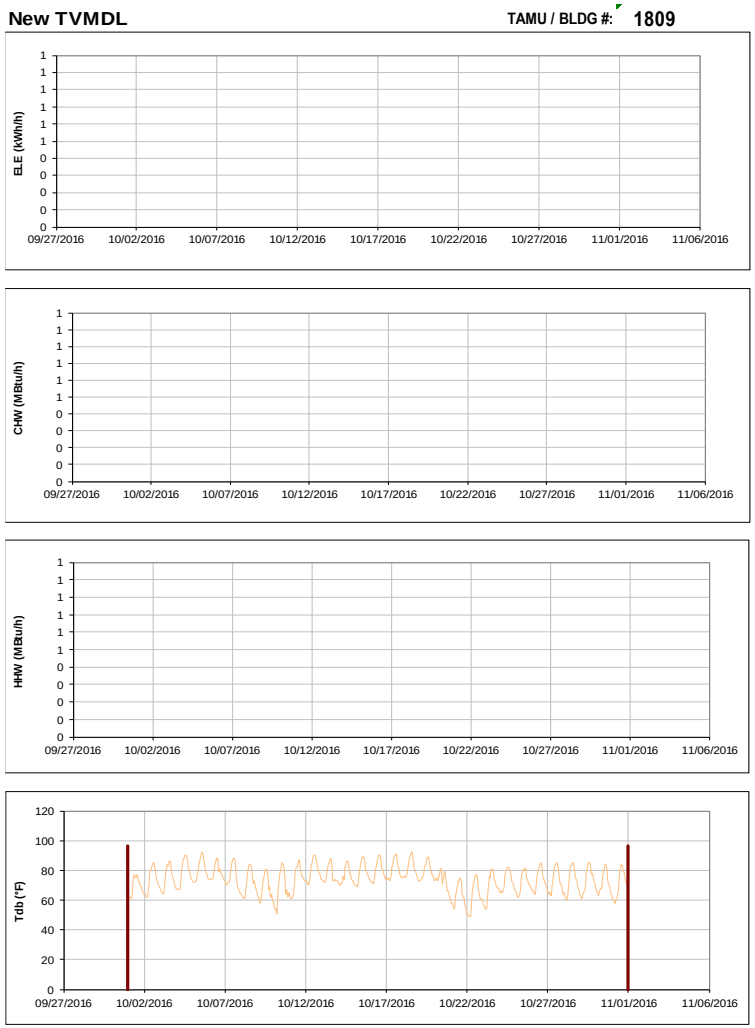


Figure III-185 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for New TVMDL during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

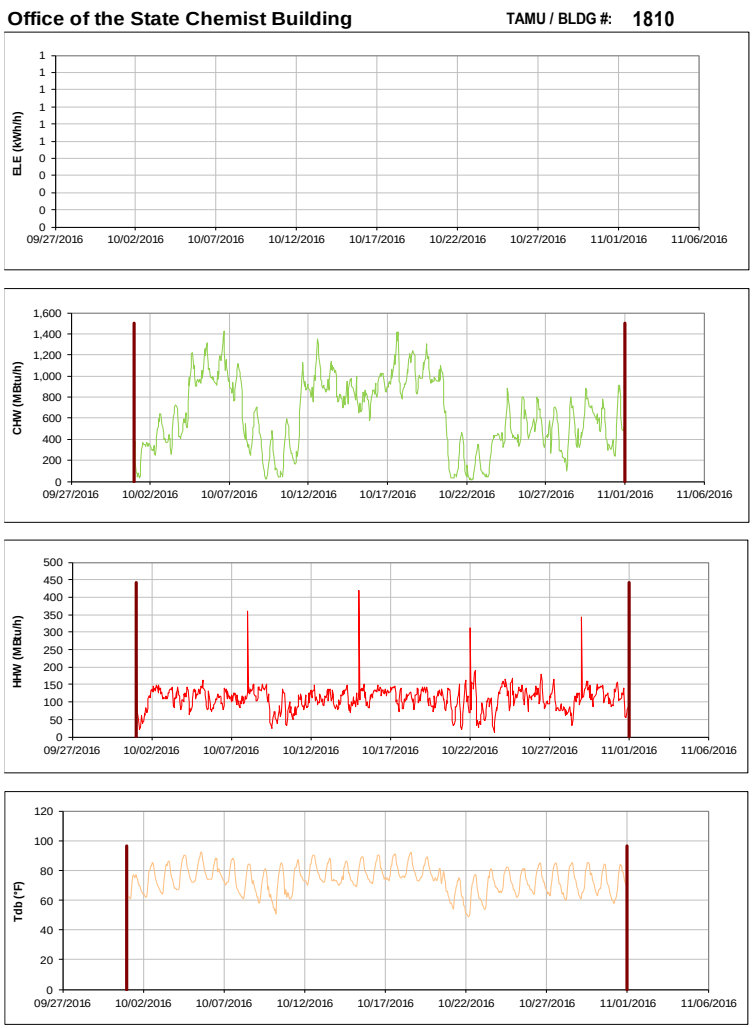


Figure III-186 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Office of the State Chemist Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-187 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Vet Med Research Bldg Addition during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

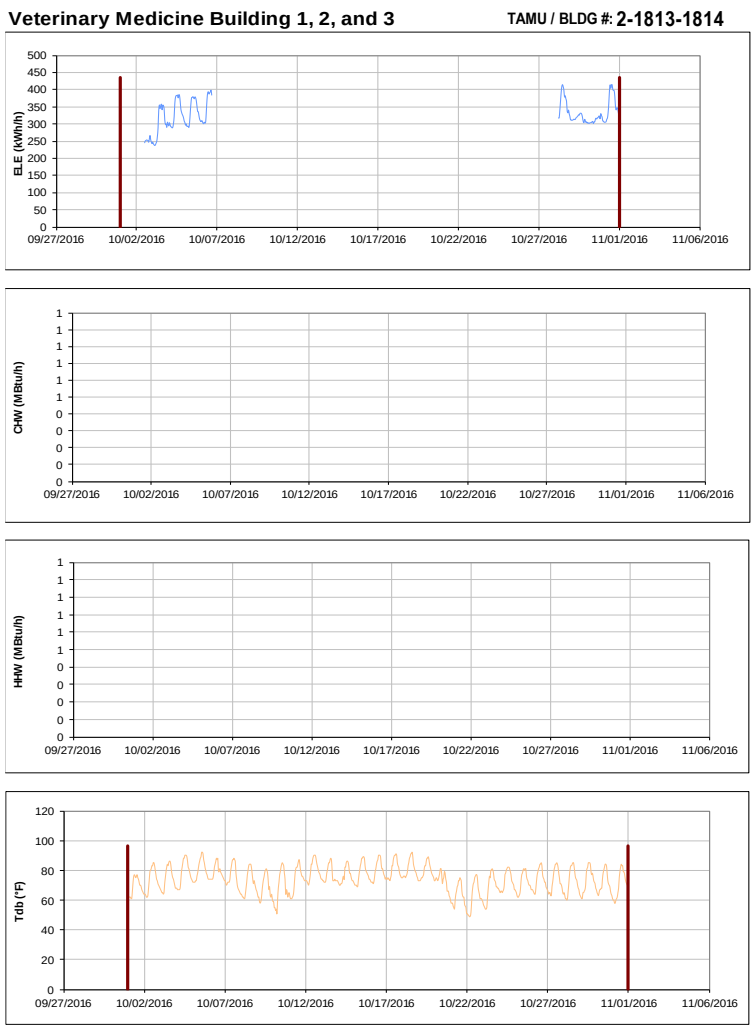


Figure III-188 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Veterinary Medicine Building 1, 2, and 3 during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

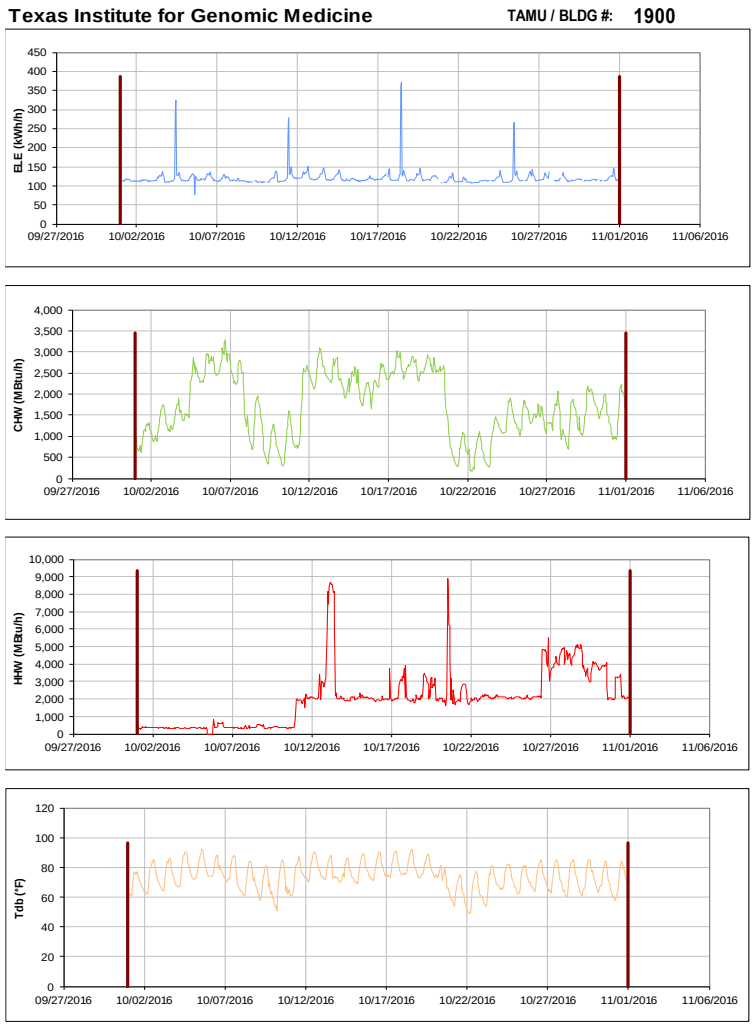


Figure III-189 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Texas Institute for Genomic Medicine during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

Figure III-190 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Texas A&M Institute for Preclinical Studies A during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

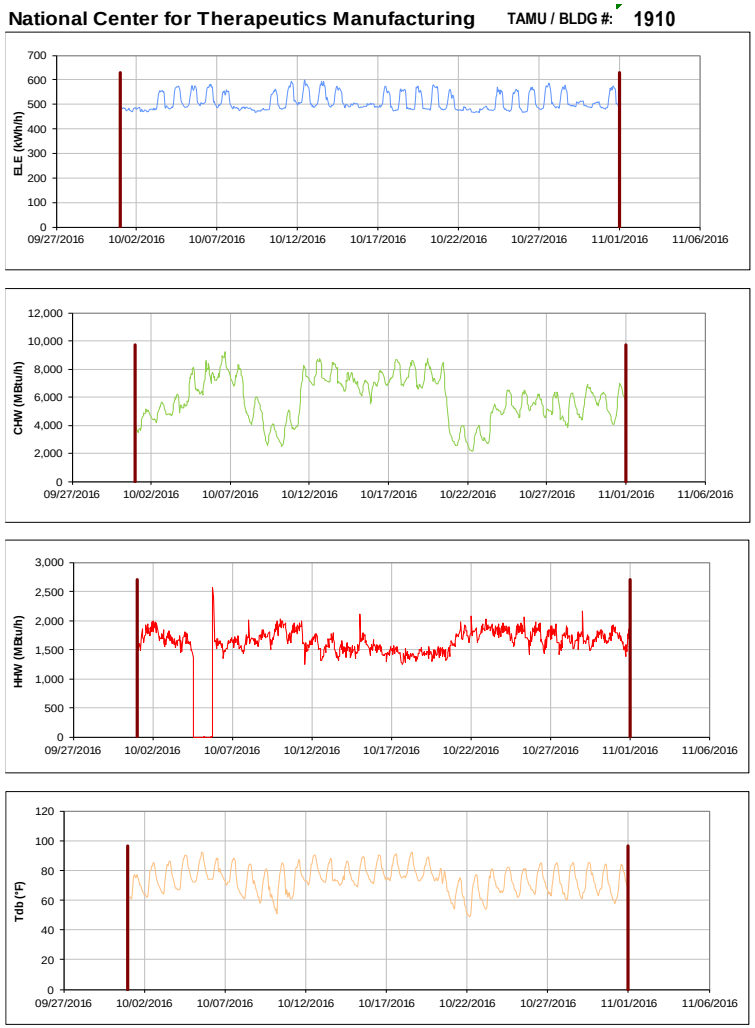


Figure III-191 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for National Center for Therapeutics Manufacturing during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

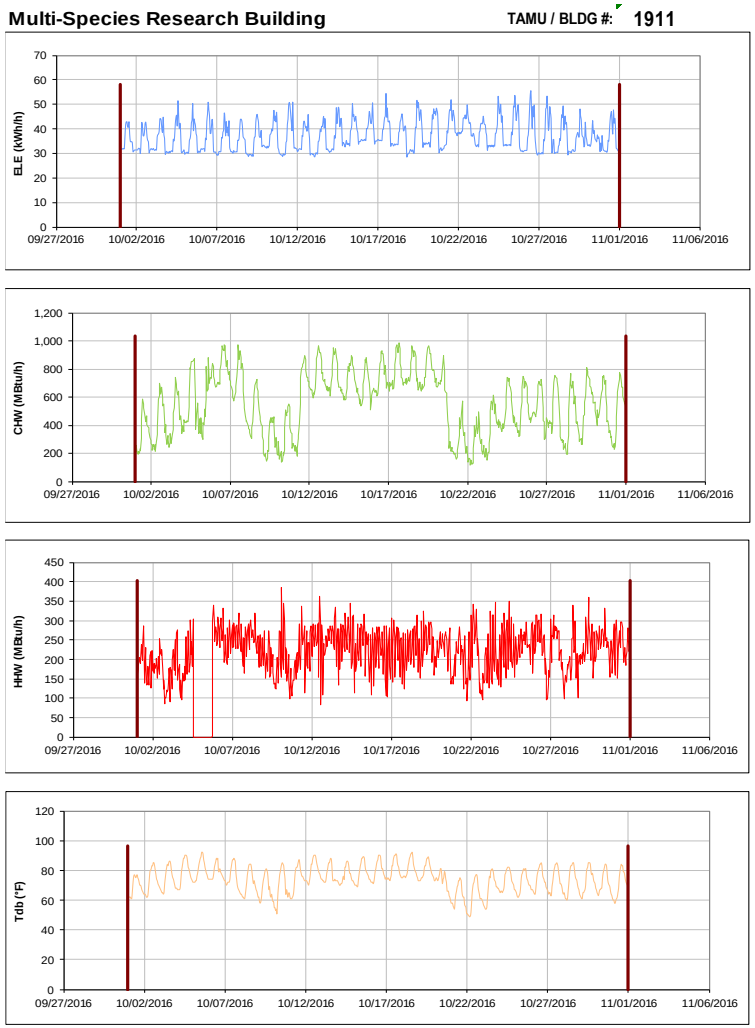


Figure III-192 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for Multi-Species Research Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

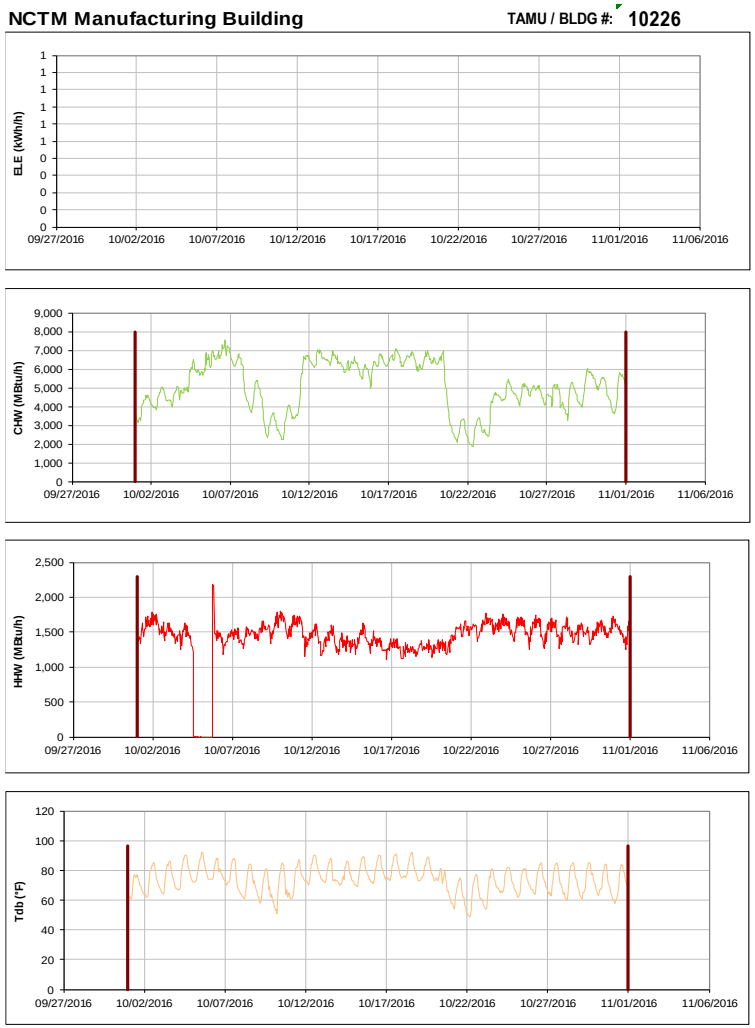


Figure III-193 Hourly Whole Building Electricity, Chilled Water, and Hot Water Consumption for NCTM Manufacturing Building during the Month of October 2016 and the Corresponding Hourly Outdoor Dry Bulb Temperature for College Station, TX

IV. Energy Balance Plots for October 2016 Consumption

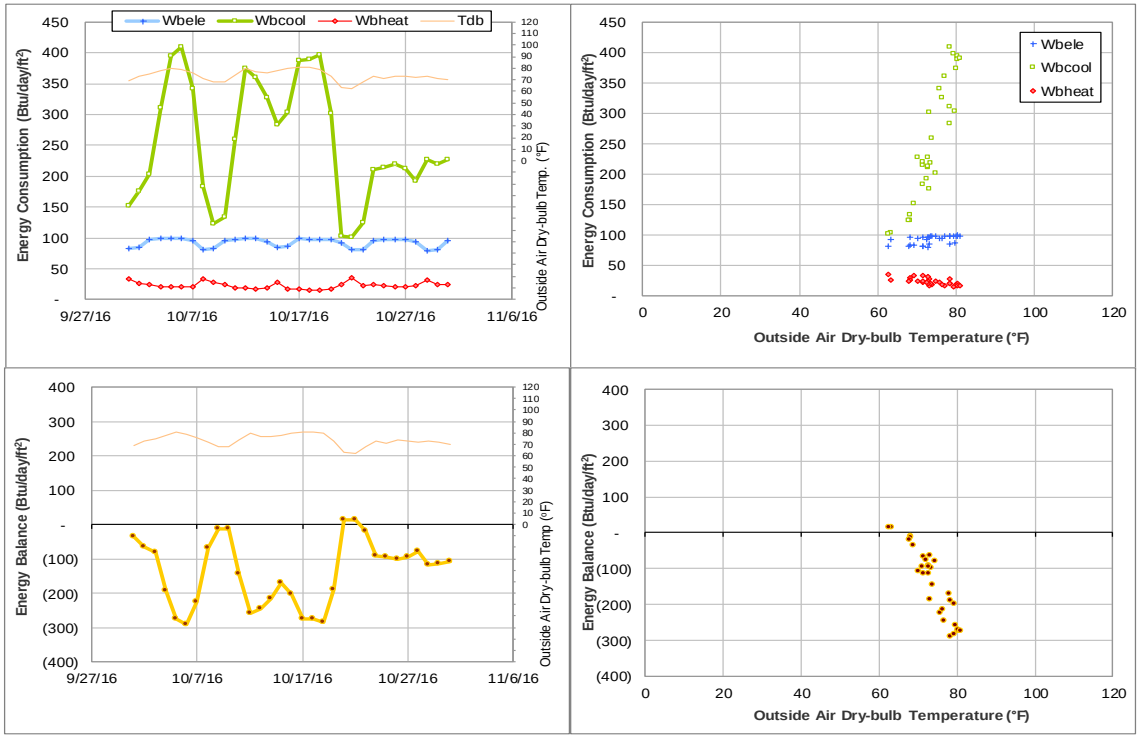


Figure IV-1 Emerging Technologies Building TAMU BLDG # 270 Energy Balance Plot during October 2016

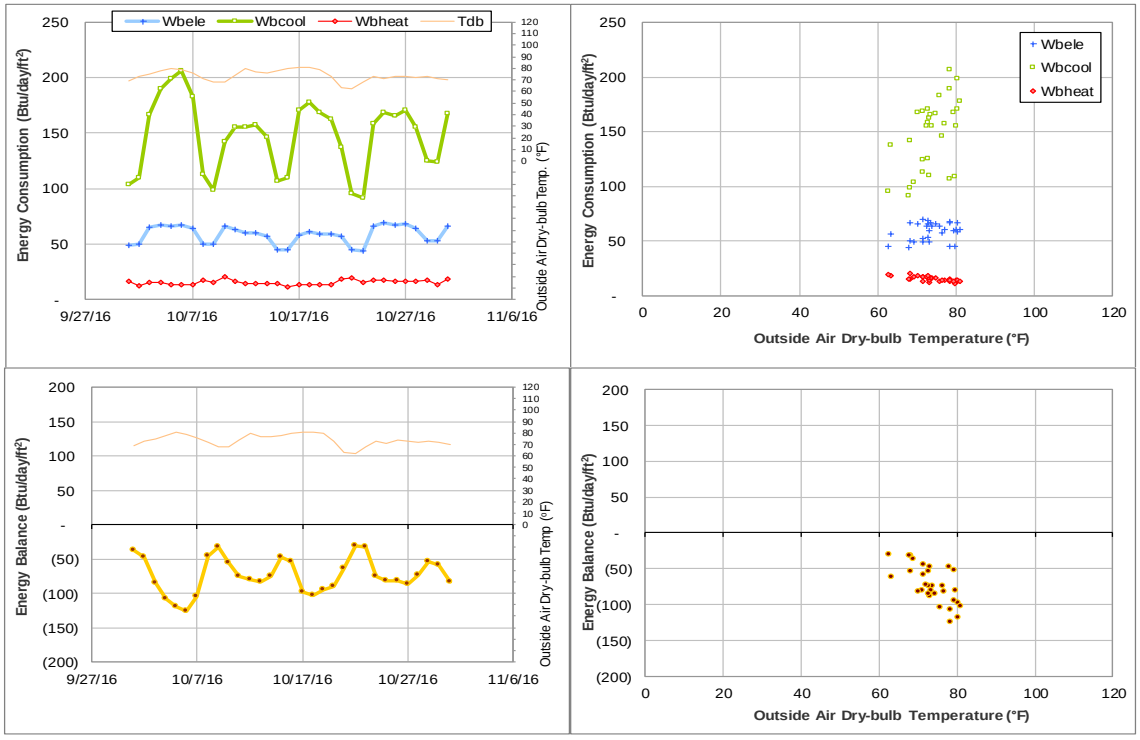


Figure IV-2 Liberal Arts and Arts & Humanities Building TAMU BLDG # 275 Energy Balance Plot during October 2016

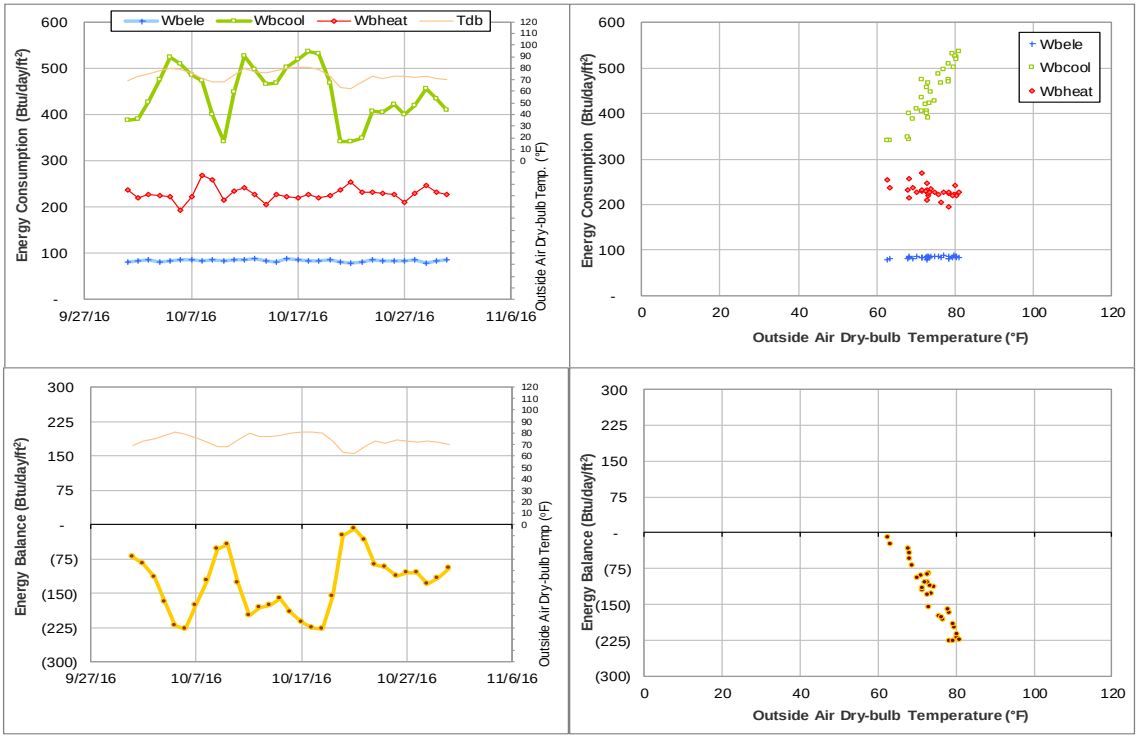


Figure IV-3 Wells Residence Hall TAMU BLDG # 290 Energy Balance Plot during October 2016

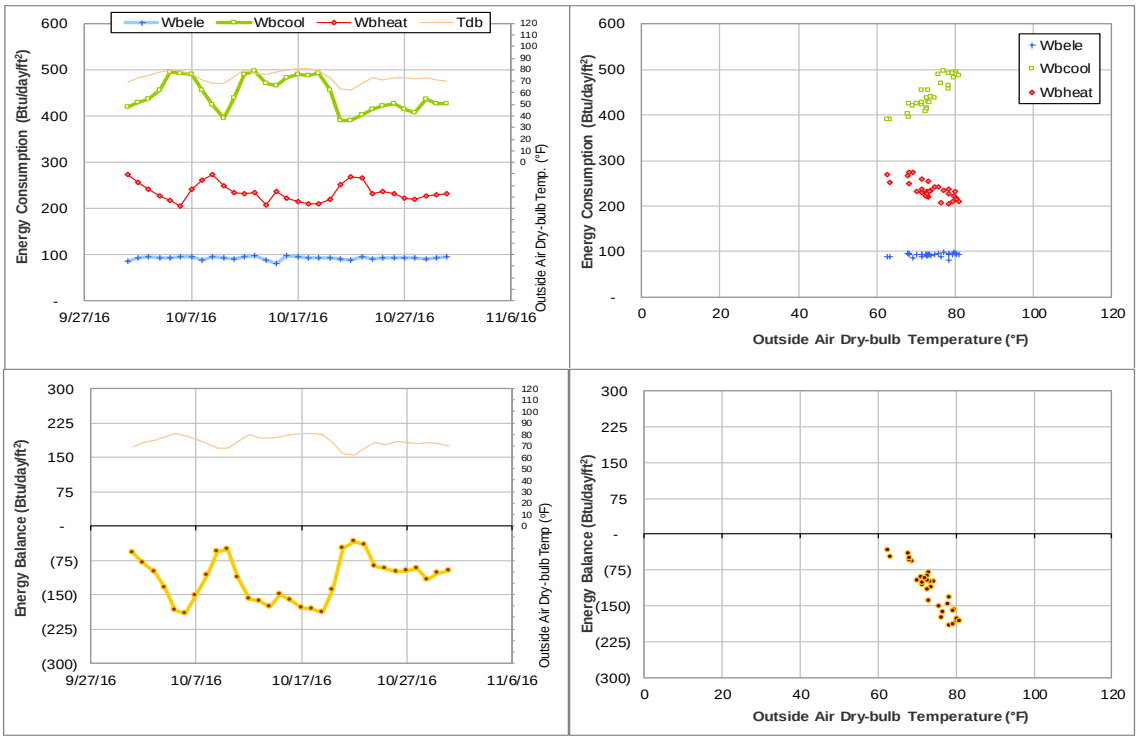


Figure IV-4 Rudder Residence Hall TAMU BLDG # 291 Energy Balance Plot during October 2016

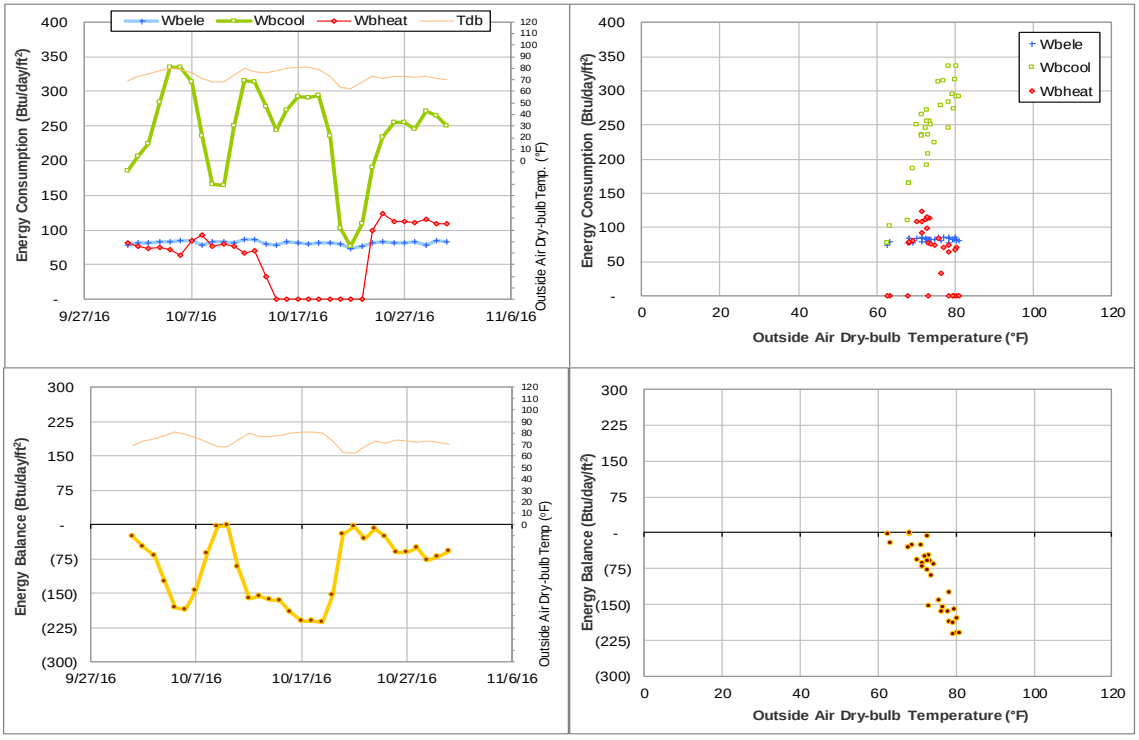


Figure IV-5 Eppright Residence Hall TAMU BLDG # 292 Energy Balance Plot during October 2016

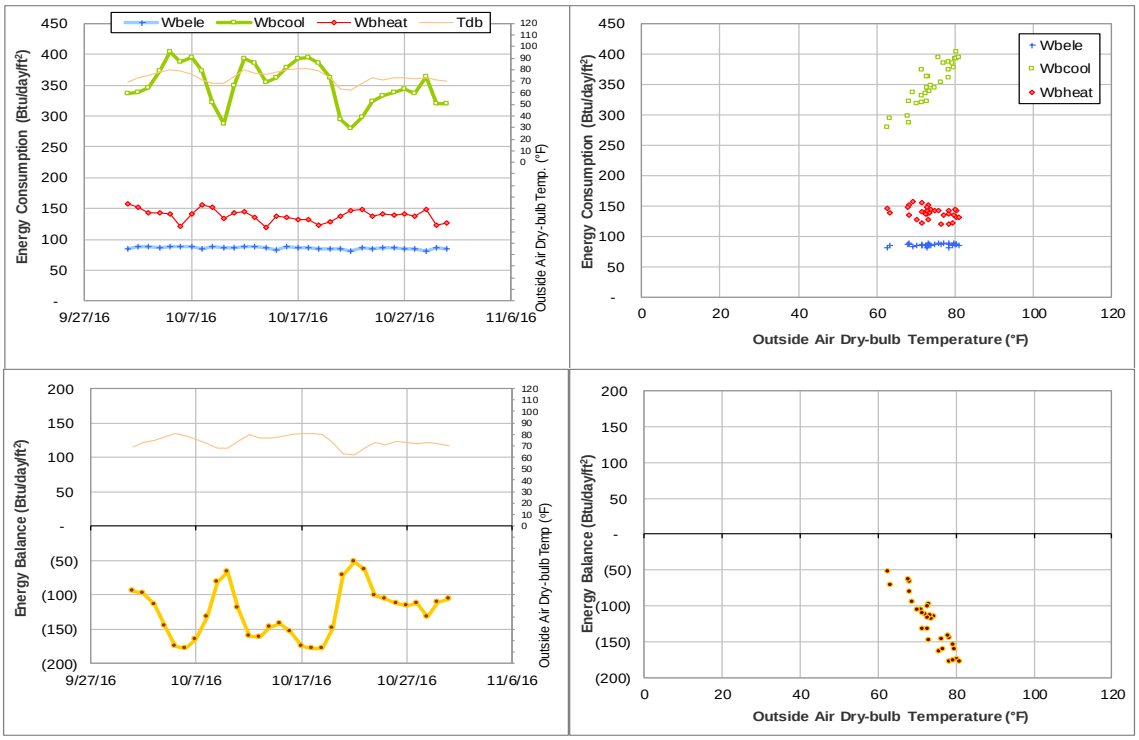


Figure IV-6 Appelt Residence Hall TAMU BLDG # 293 Energy Balance Plot during October 2016

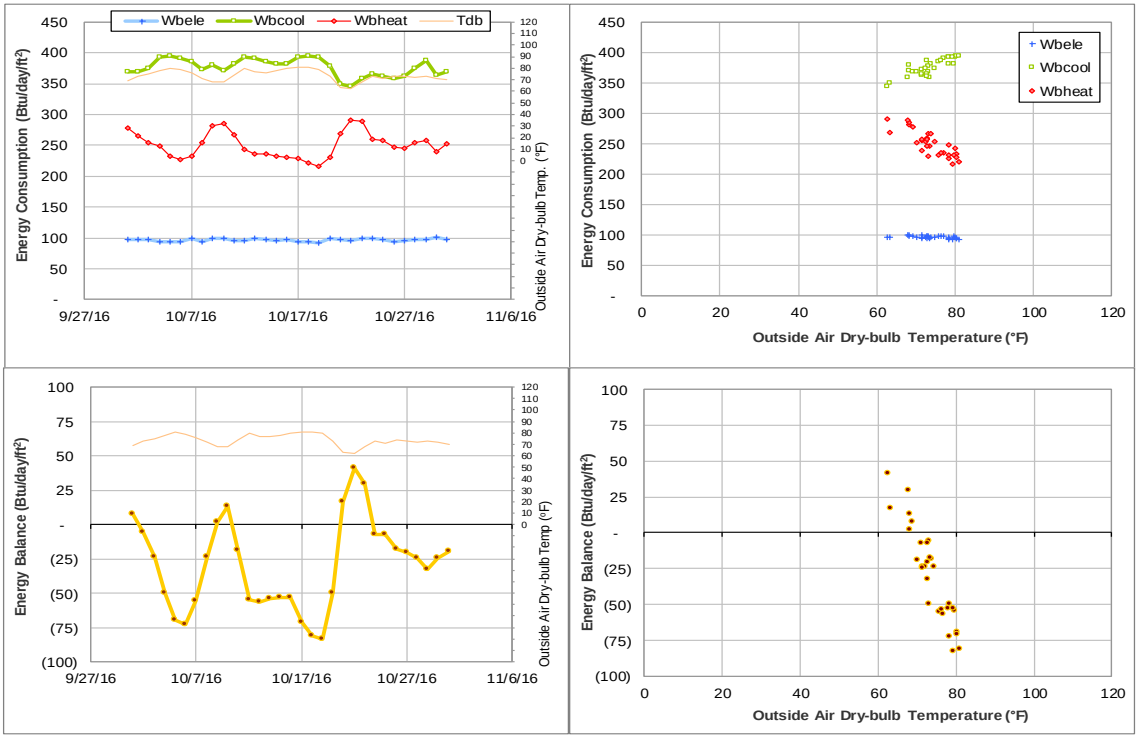


Figure IV-7 Lechner Residence Hall TAMU BLDG # 294 Energy Balance Plot during October 2016

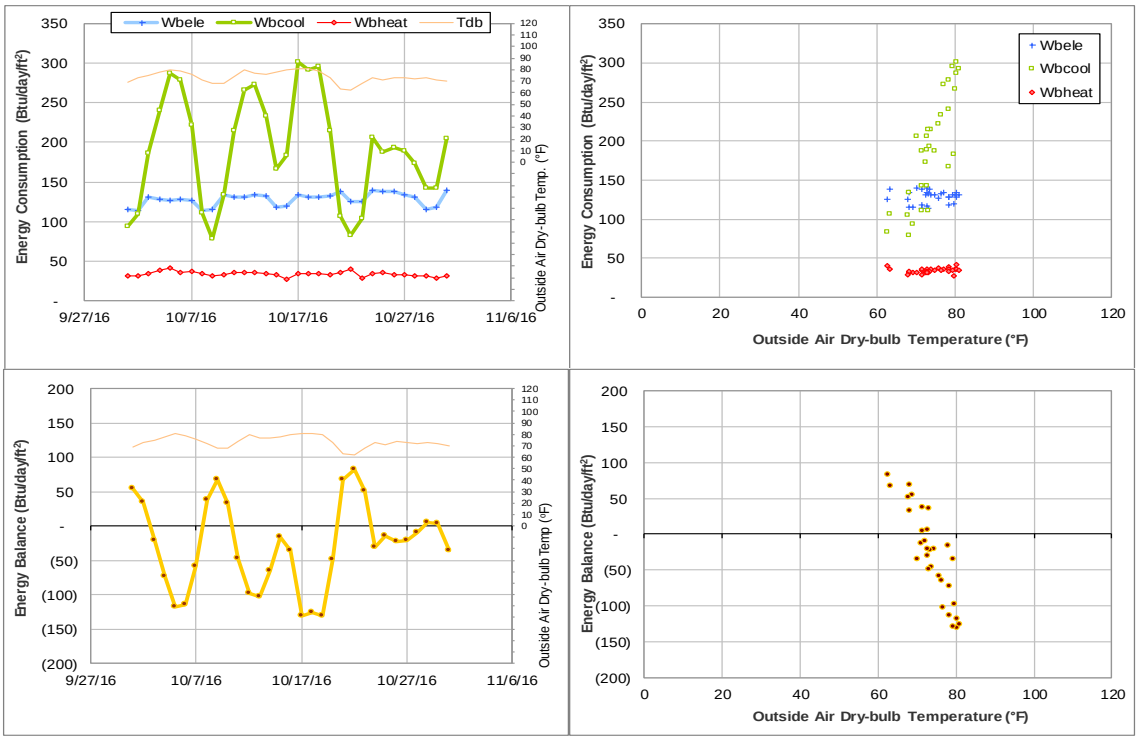


Figure IV-8 Mitchell Inst. for Fundamental Phys & Astronomy TAMU BLDG # 296 Energy Balance Plot during October 2016

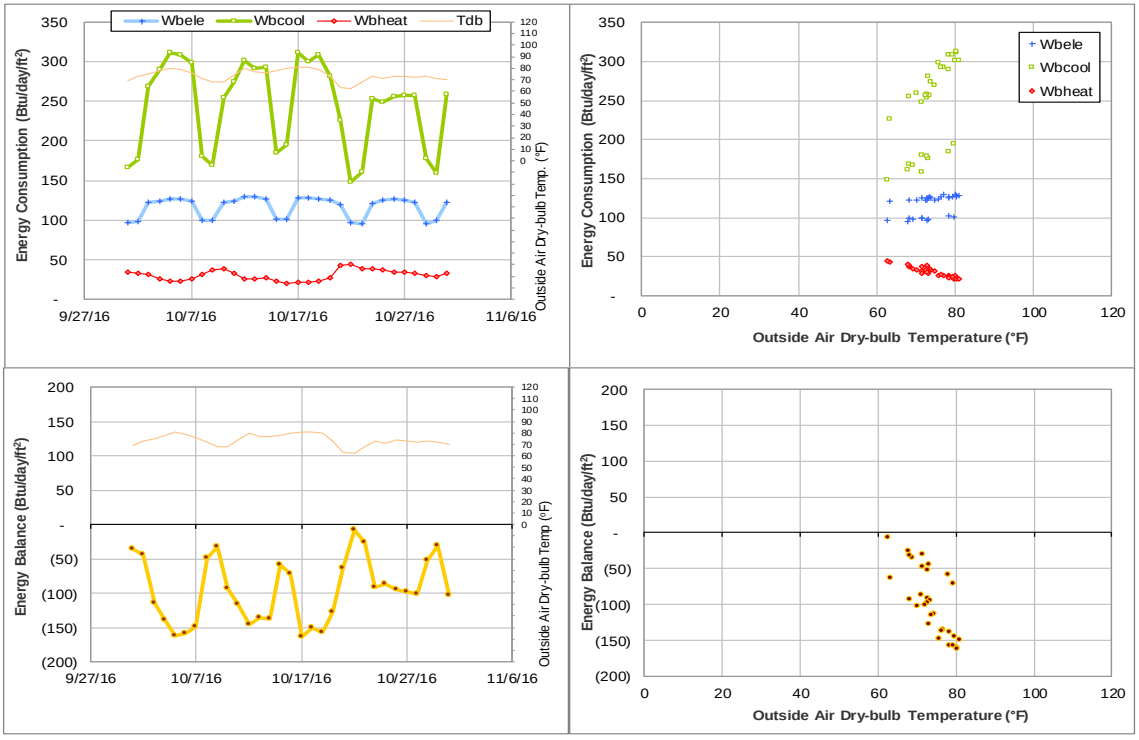


Figure IV-9 CE TTI Office & Lab Building TAMU BLDG # 325 Energy Balance Plot during October 2016

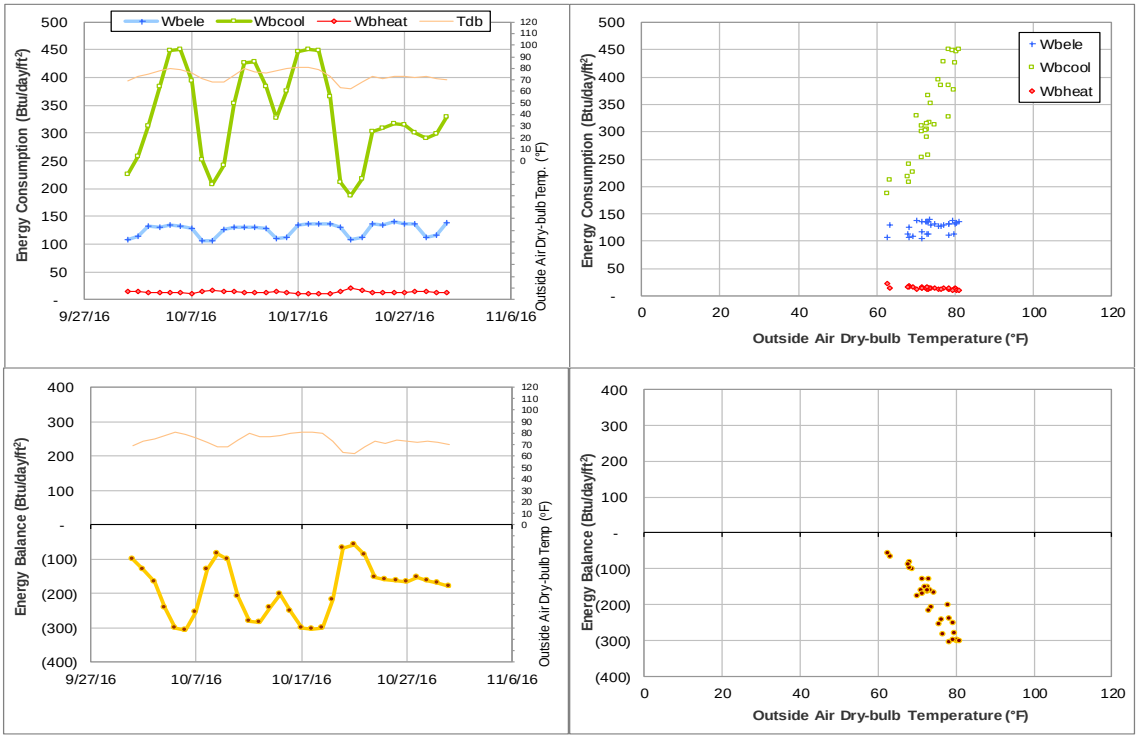


Figure IV-10 Bright Aerospace Building TAMU BLDG # 353 Energy Balance Plot during October 2016

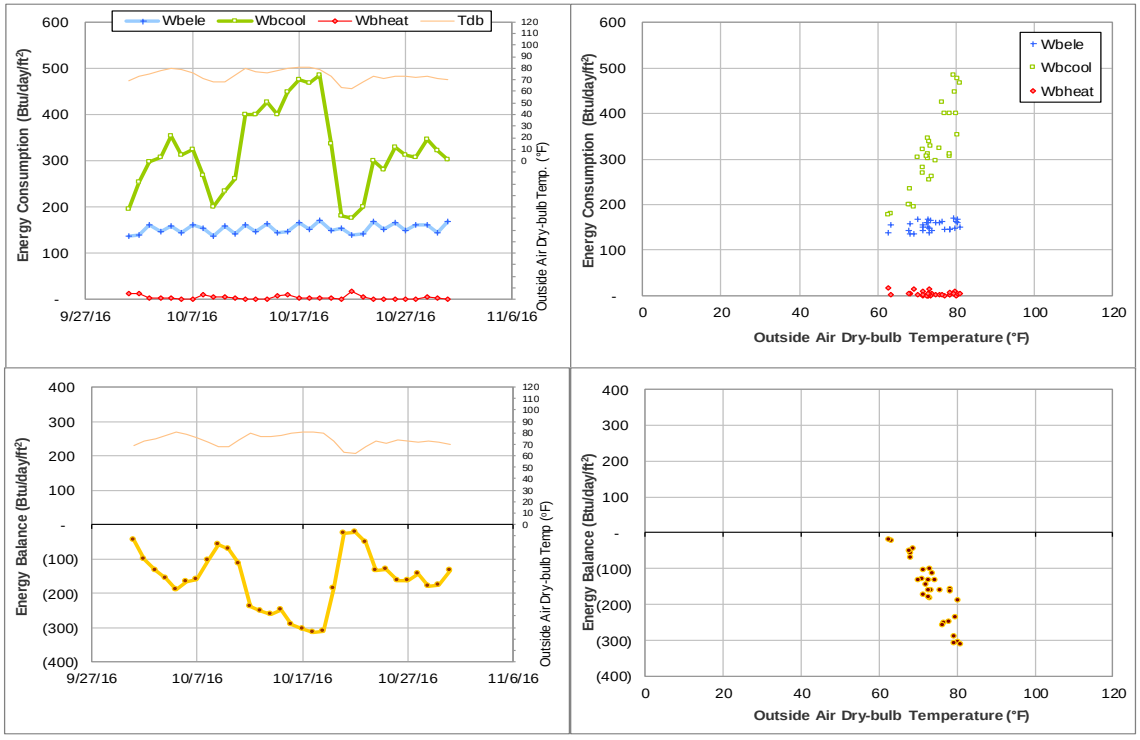


Figure IV-11 Davis Football Player Development Center TAMU BLDG # 358 Energy Balance Plot during October 2016

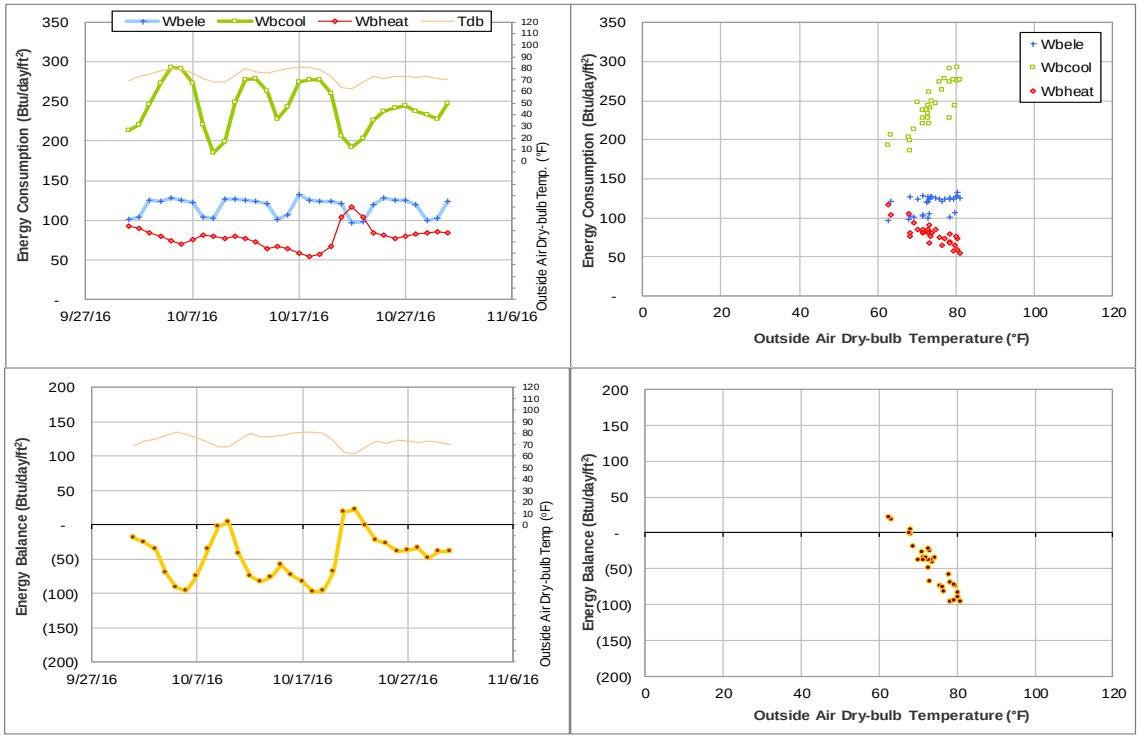


Figure IV-12 Architecture Building B&C TAMU BLDG # 359 and #432 Energy Balance Plot during October 2016

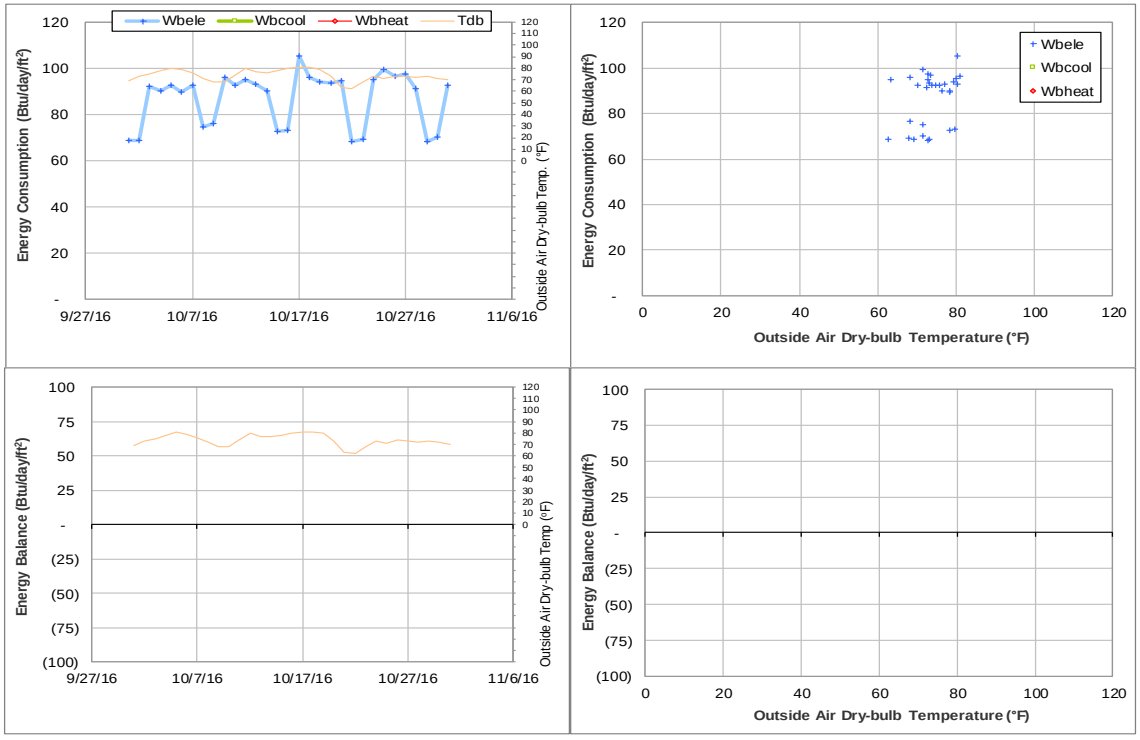


Figure IV-13 Architecture Building B TAMU BLDG # 359 Energy Balance Plot during October 2016

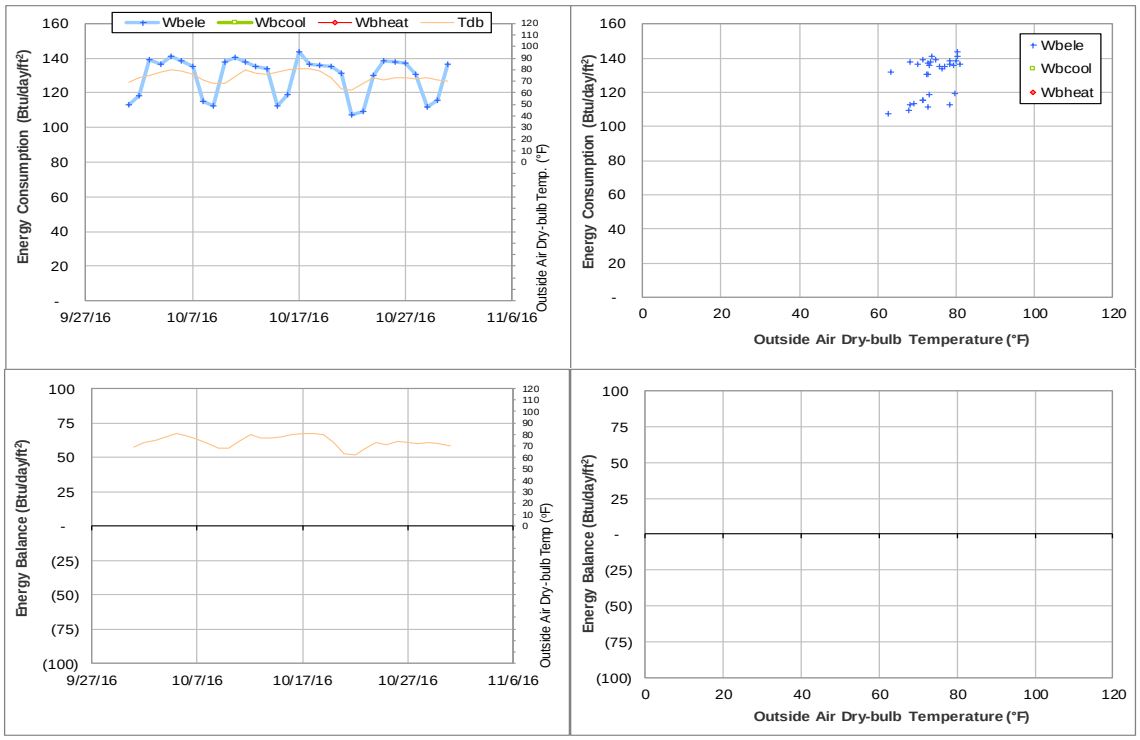


Figure IV-14 Architecture Building C TAMU BLDG # 432 Energy Balance Plot during October 2016

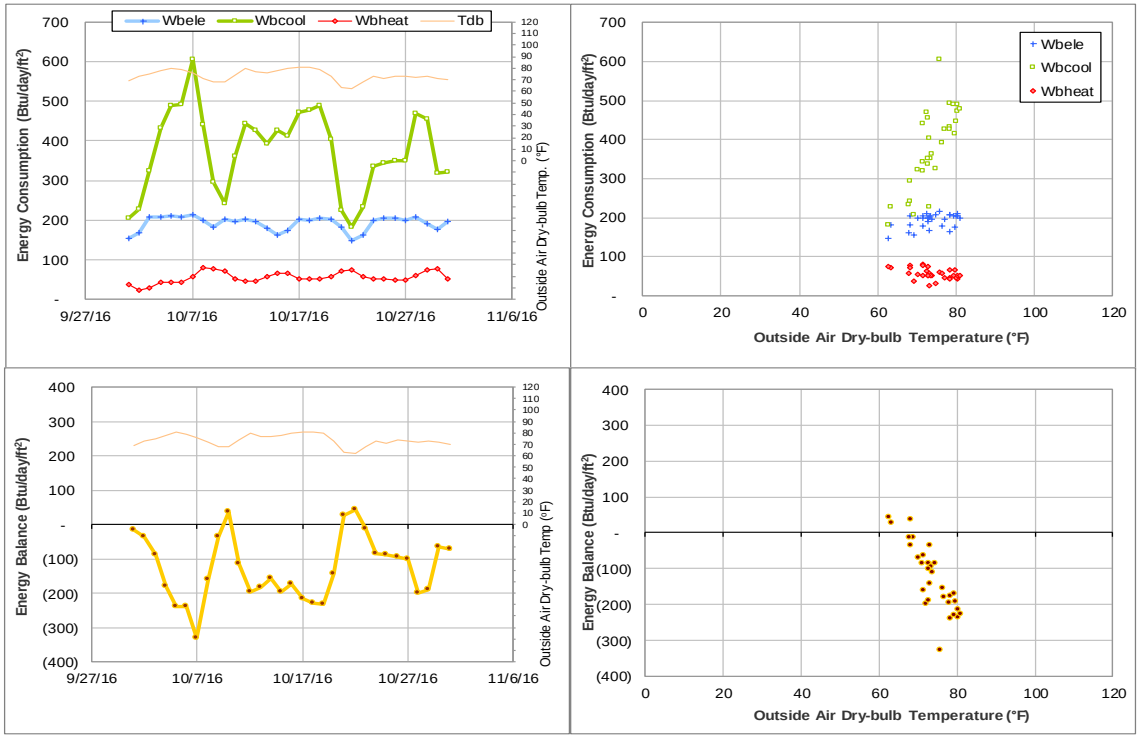


Figure IV-15 Bright Football Complex TAMU BLDG # 361 Energy Balance Plot during October 2016

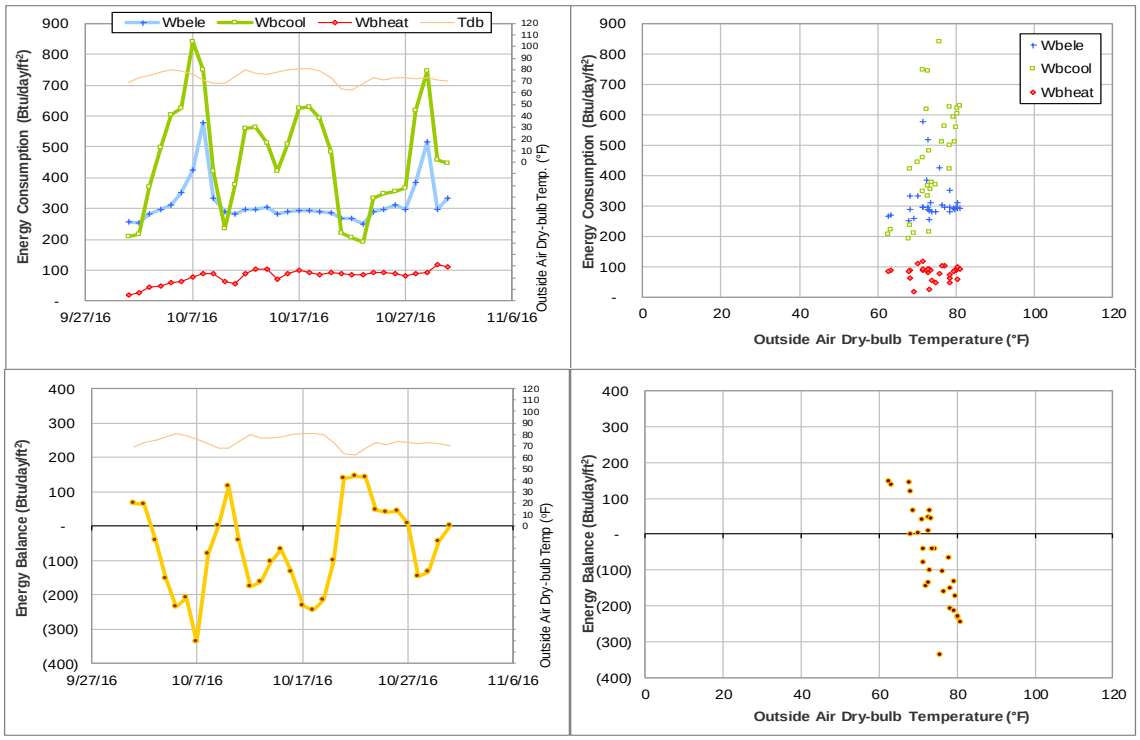


Figure IV-16 Kyle Field TAMU BLDG # 367 Energy Balance Plot during October 2016

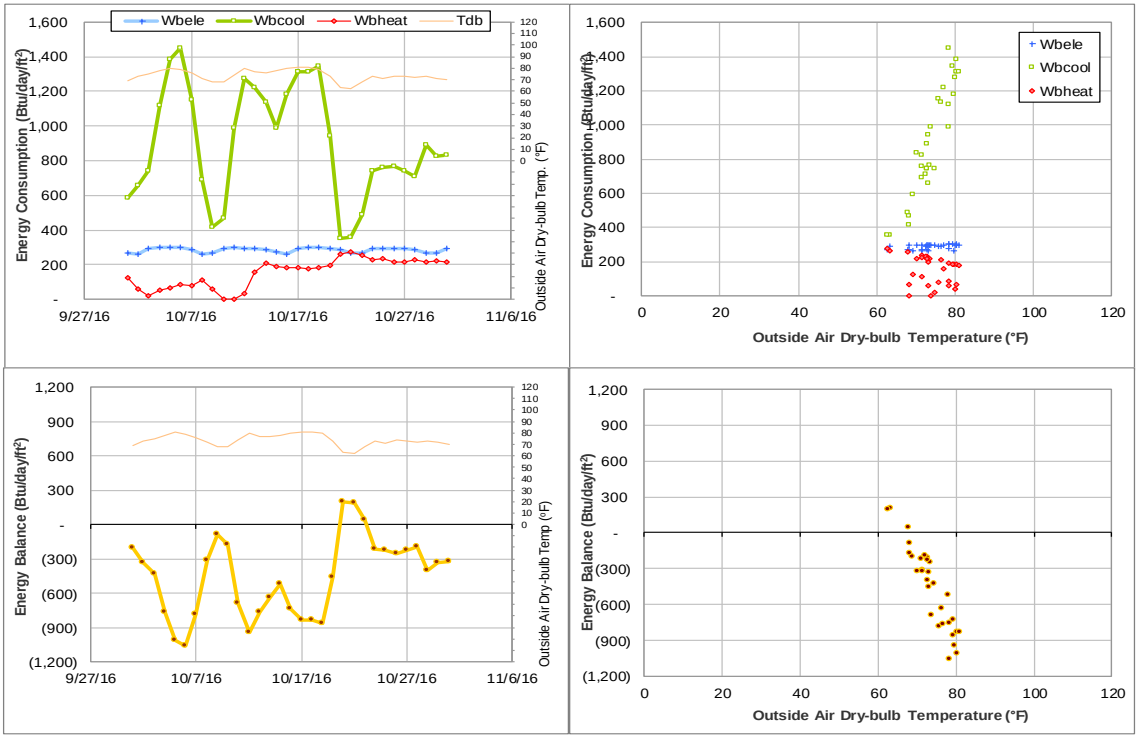


Figure IV-17 Chemistry Building Addition TAMU BLDG # 376 Energy Balance Plot during October 2016

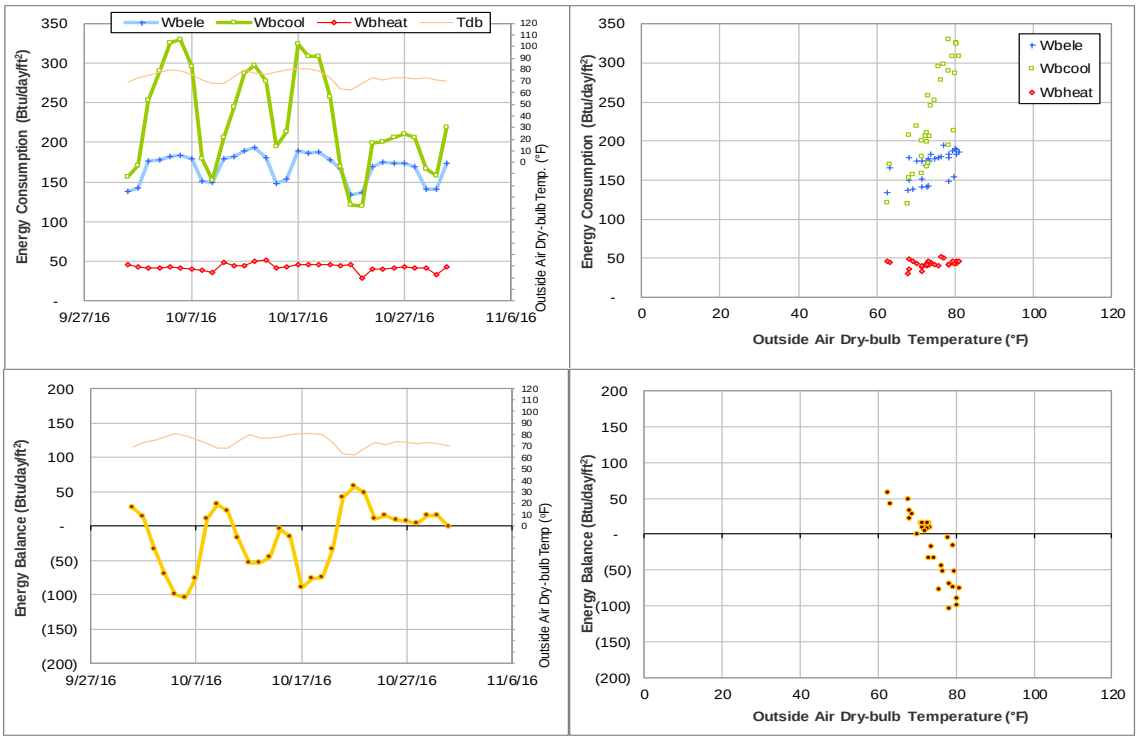


Figure IV-18 Koldus Building TAMU BLDG # 383 Energy Balance Plot during October 2016

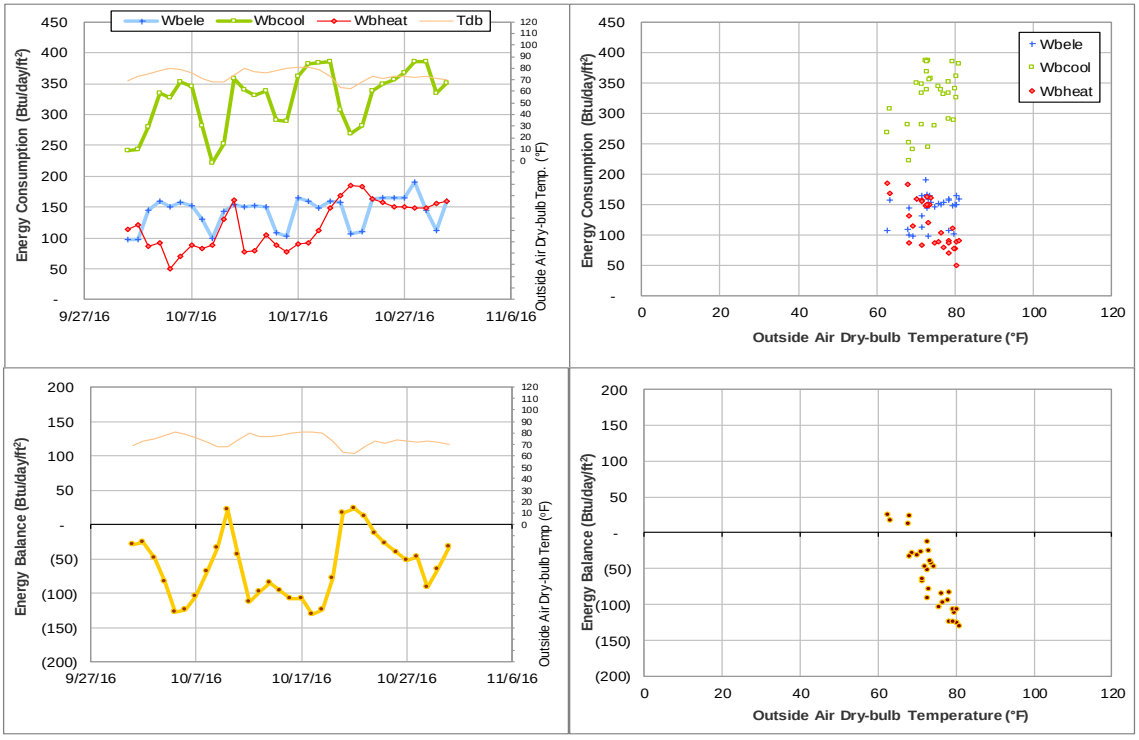


Figure IV-19 Sanders Corps of Cadets Center TAMU BLDG # 384 Energy Balance Plot during October 2016

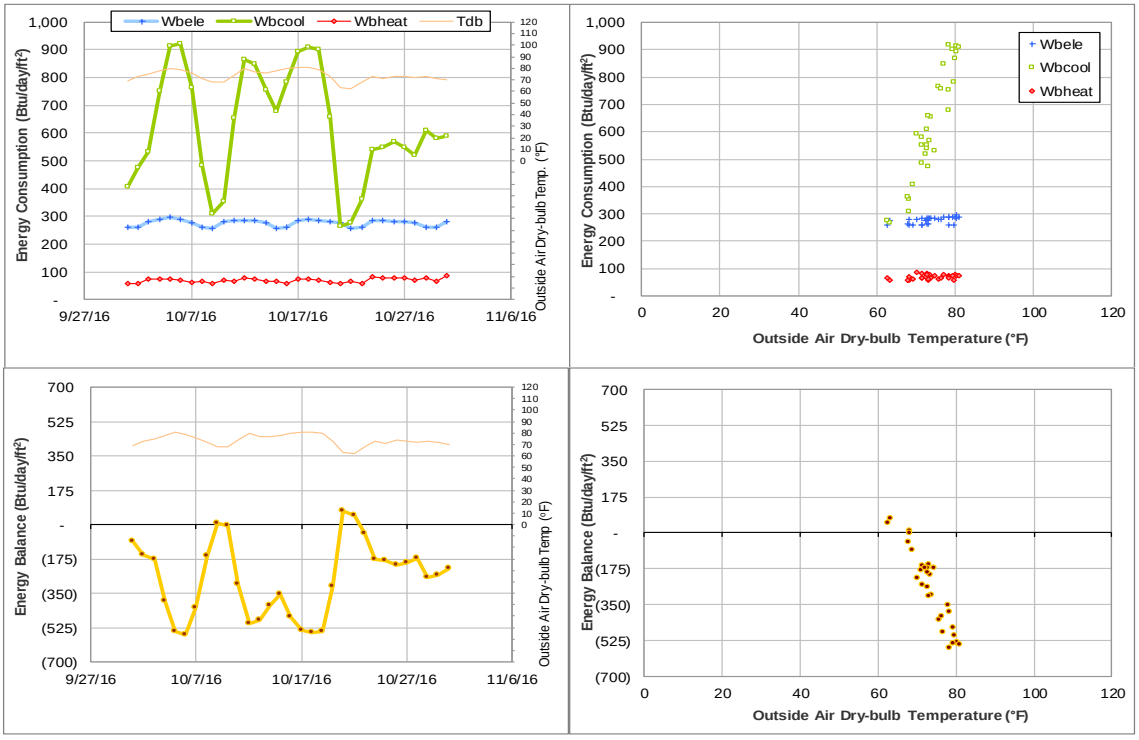


Figure IV-20 Jack E. Brown Chemical Engineering Building TAMU BLDG # 386 Energy Balance Plot during October 2016

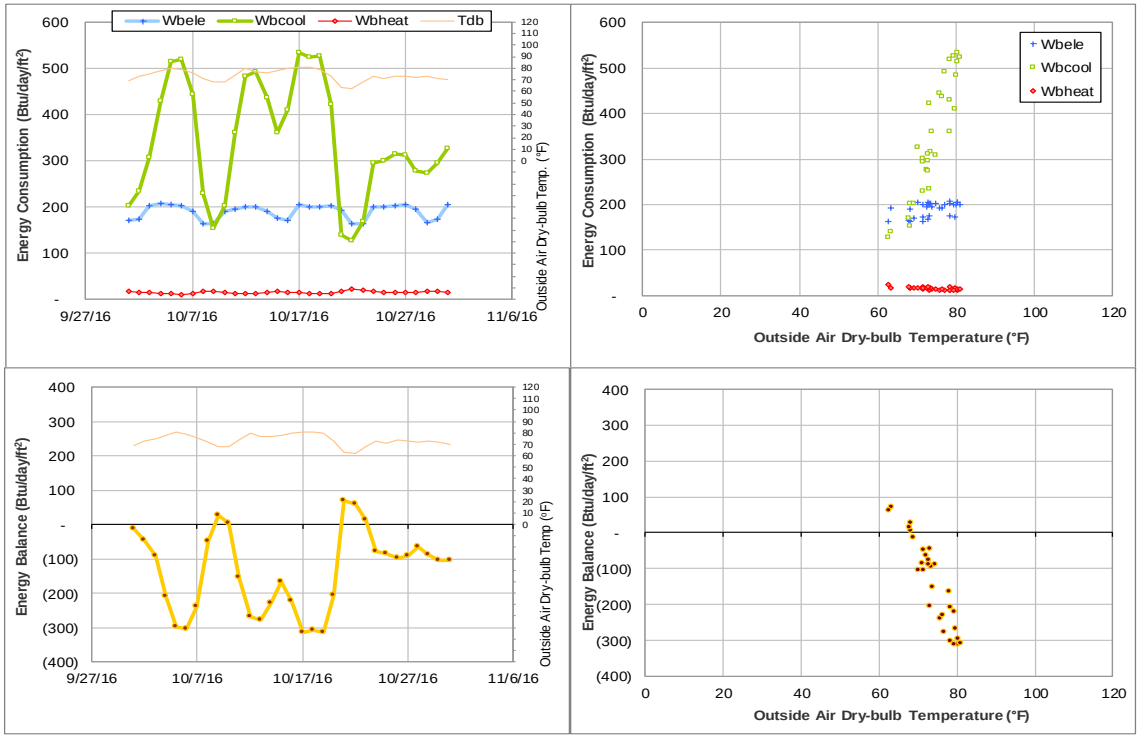


Figure IV-21 Richardson Petroleum Engineering Building TAMU BLDG # 387 Energy Balance Plot during October 2016

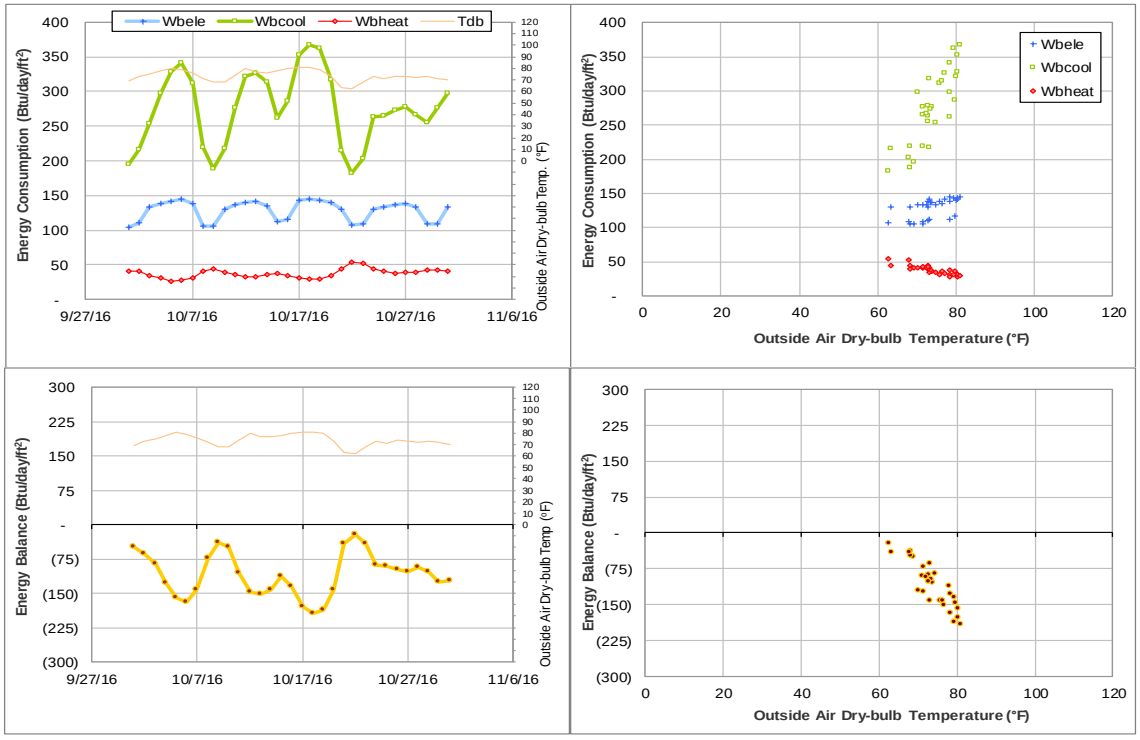


Figure IV-22 James J. Cain'51 and Mechanical Engineering Office Building TAMU BLDG # 391 Energy Balance Plot during October 2016

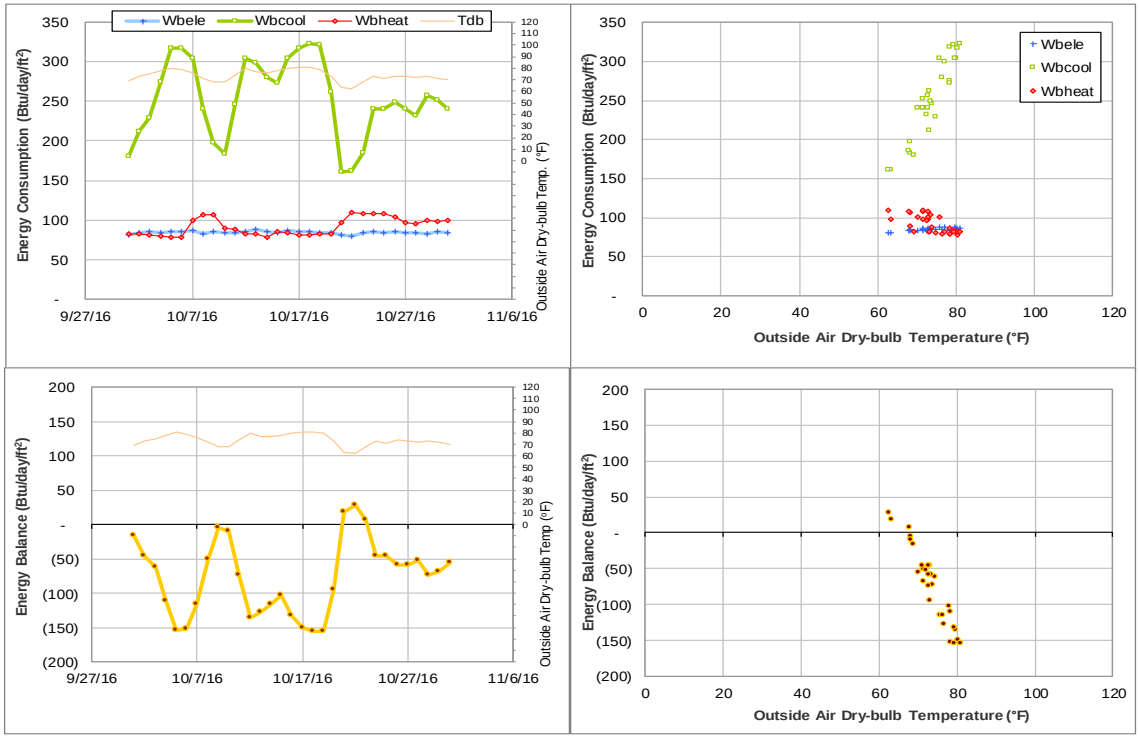


Figure IV-23 Underwood Residence Hall TAMU BLDG # 394 Energy Balance Plot during October 2016

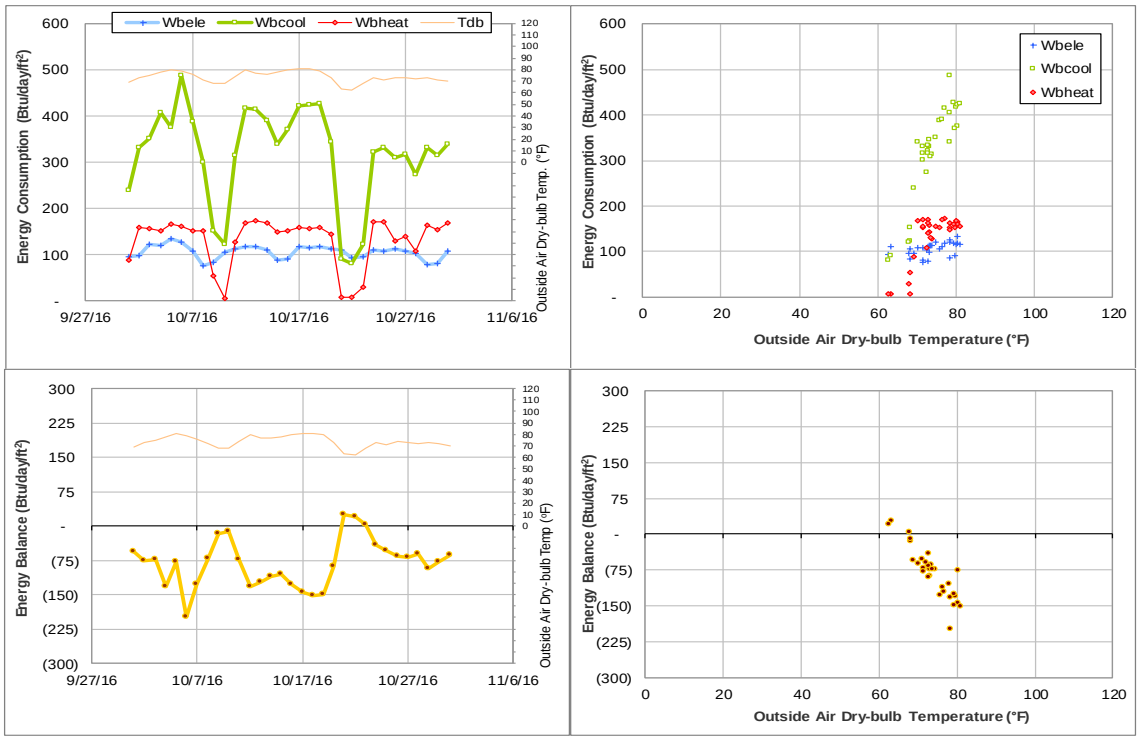


Figure IV-24 Langford Architecture Center Building A TAMU BLDG # 398 Energy Balance Plot during October 2016

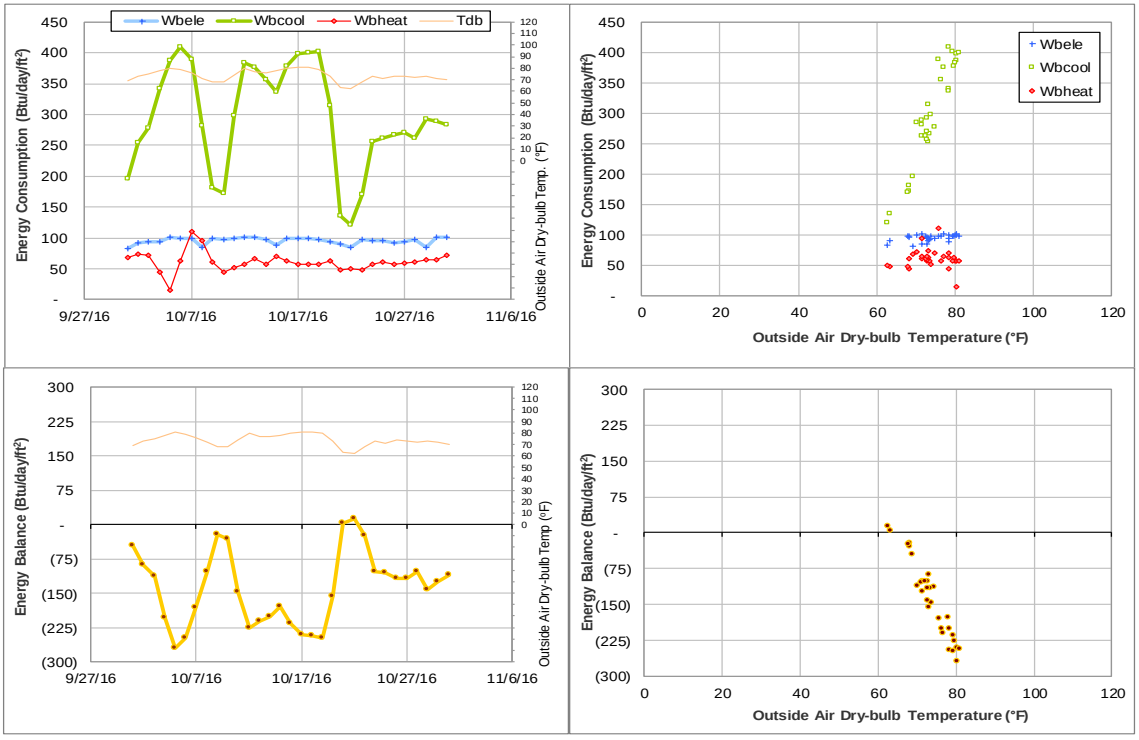


Figure IV-25 Spence Hall, Briggs Hall, and Ash II LLC TAMU BLDG # 400, #402, and 1405 Energy Balance Plot during October 2016

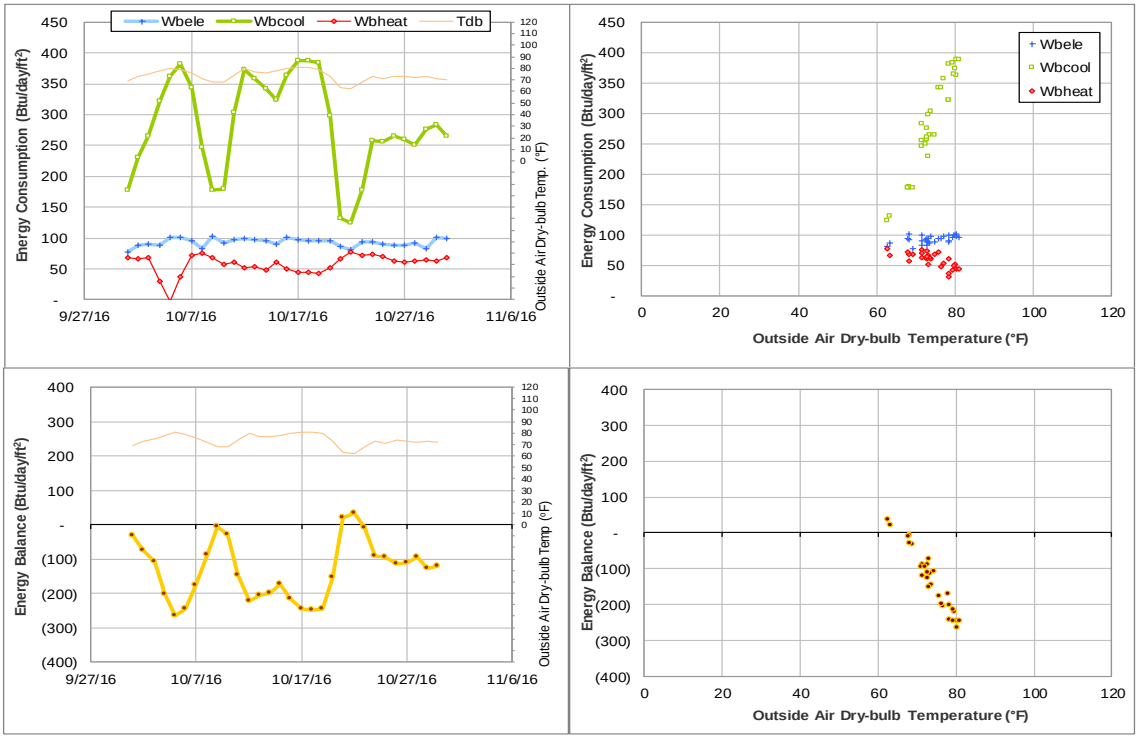


Figure IV-26 Spence Hall Dorm 1 TAMU BLDG # 400 Energy Balance Plot during October 2016

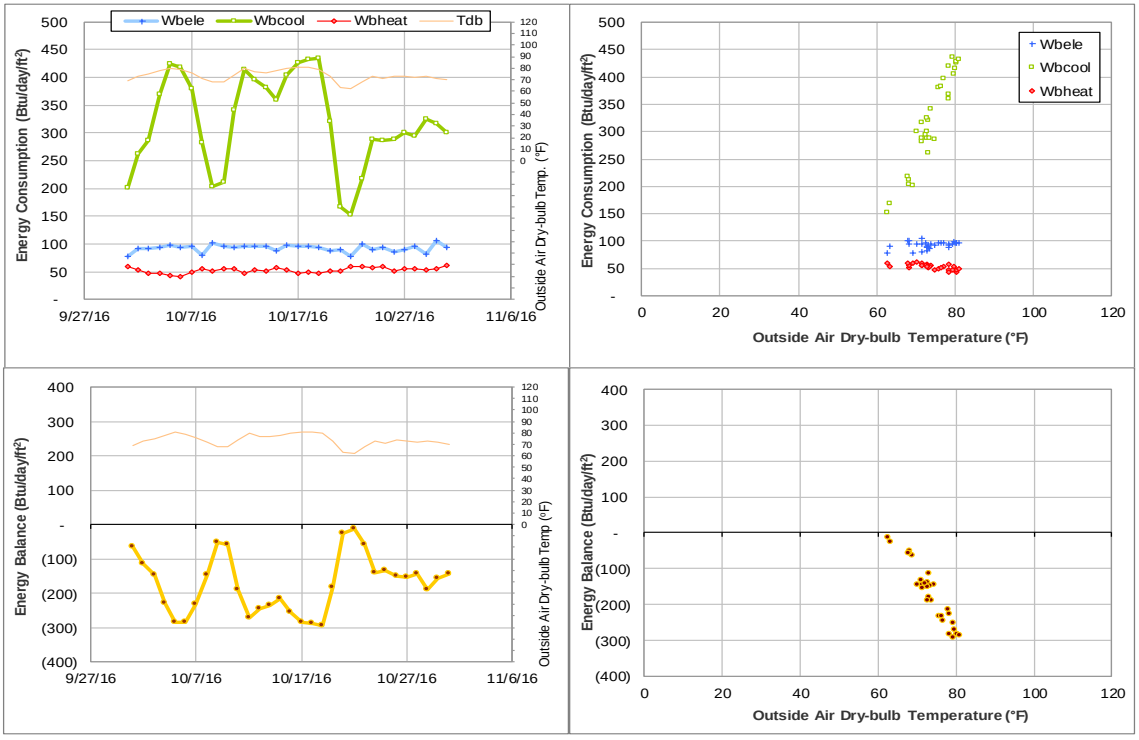


Figure IV-27 Briggs Hall Dorm 3 TAMU BLDG # 402 Energy Balance Plot during October 2016

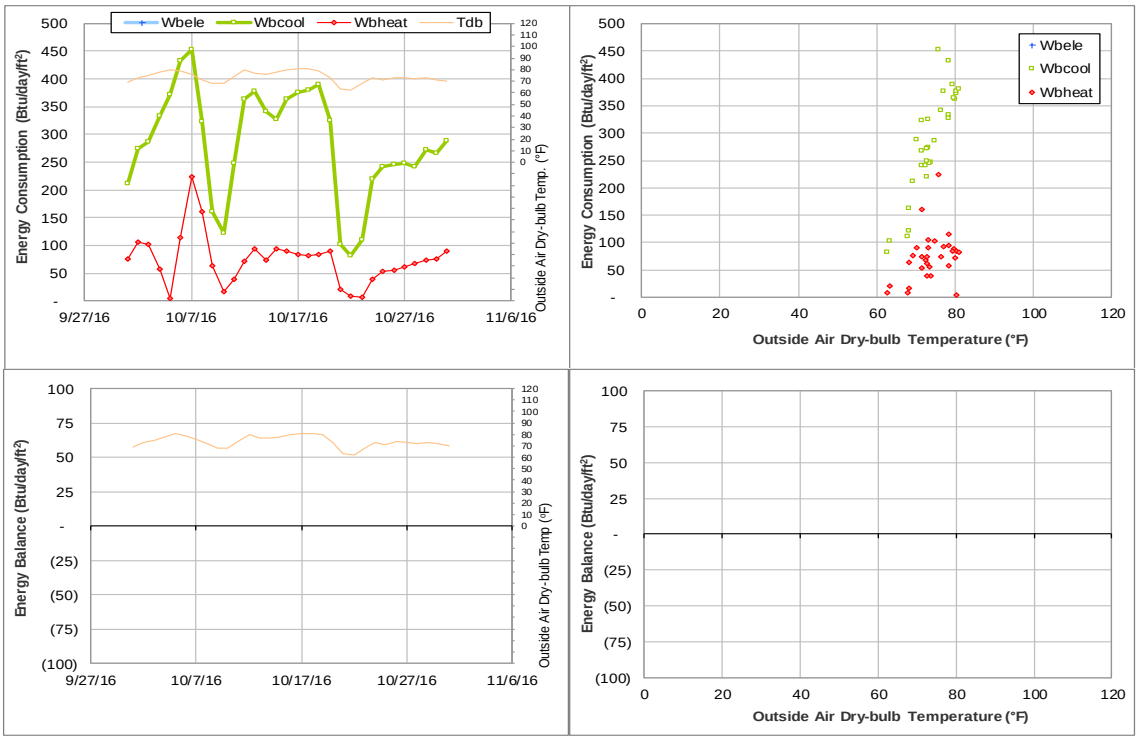


Figure IV-28 Ash II LLC TAMU BLDG # 1405 Energy Balance Plot during October 2016

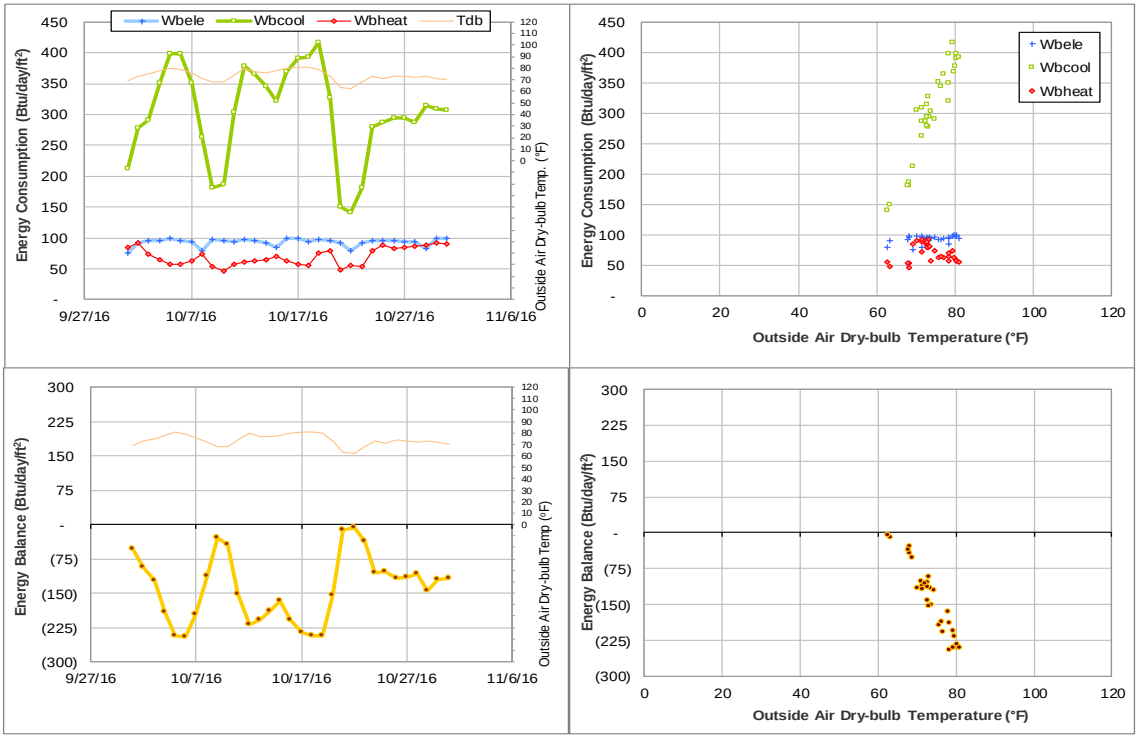


Figure IV-29 Kiest Hall, Fountain Hall, and Plank LLC TAMU BLDG # 401, #403, and #1404 Energy Balance Plot during October 2016

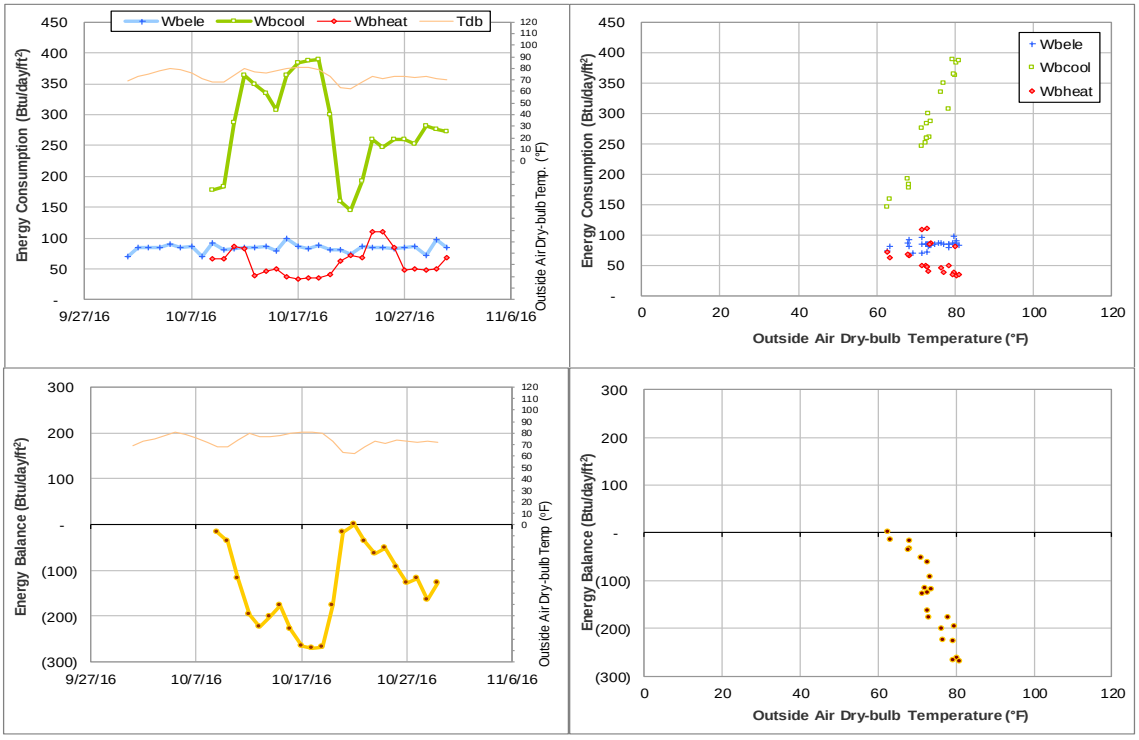


Figure IV-30 Kiest Hall Dorm 2 TAMU BLDG # 401 Energy Balance Plot during October 2016

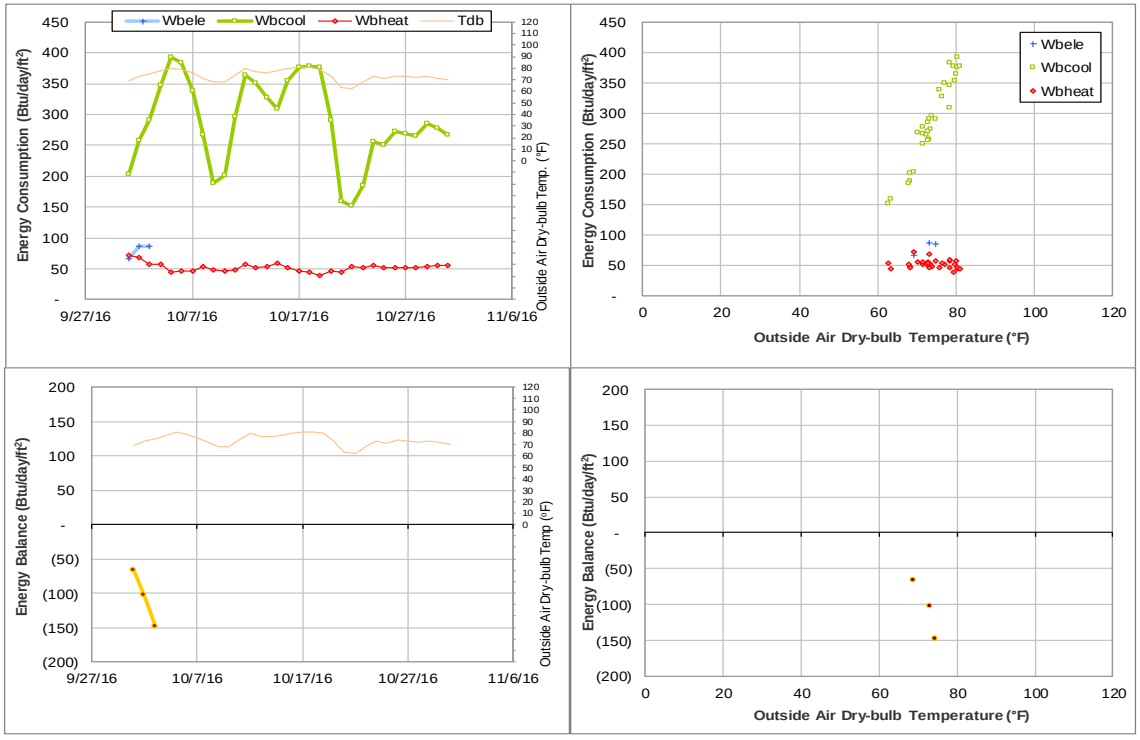


Figure IV-31 Fountain Hall Dorm 4 TAMU BLDG # 403 Energy Balance Plot during October 2016

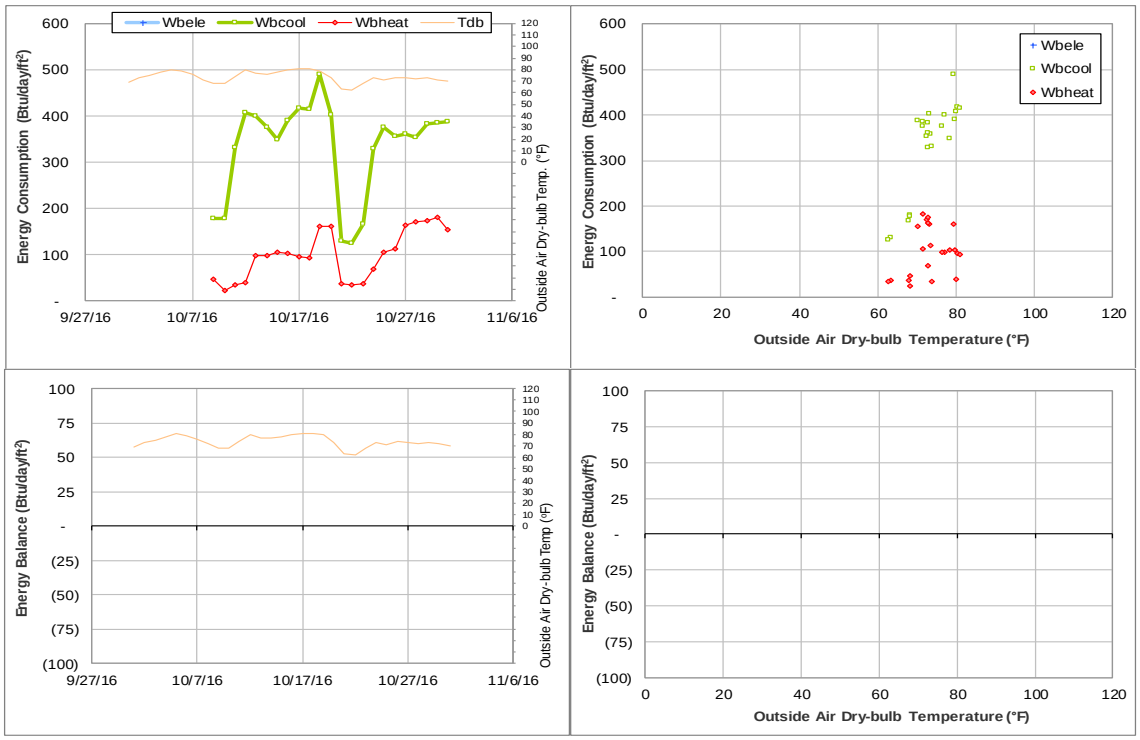


Figure IV-32 Plank LLC TAMU BLDG # 1404 Energy Balance Plot during October 2016

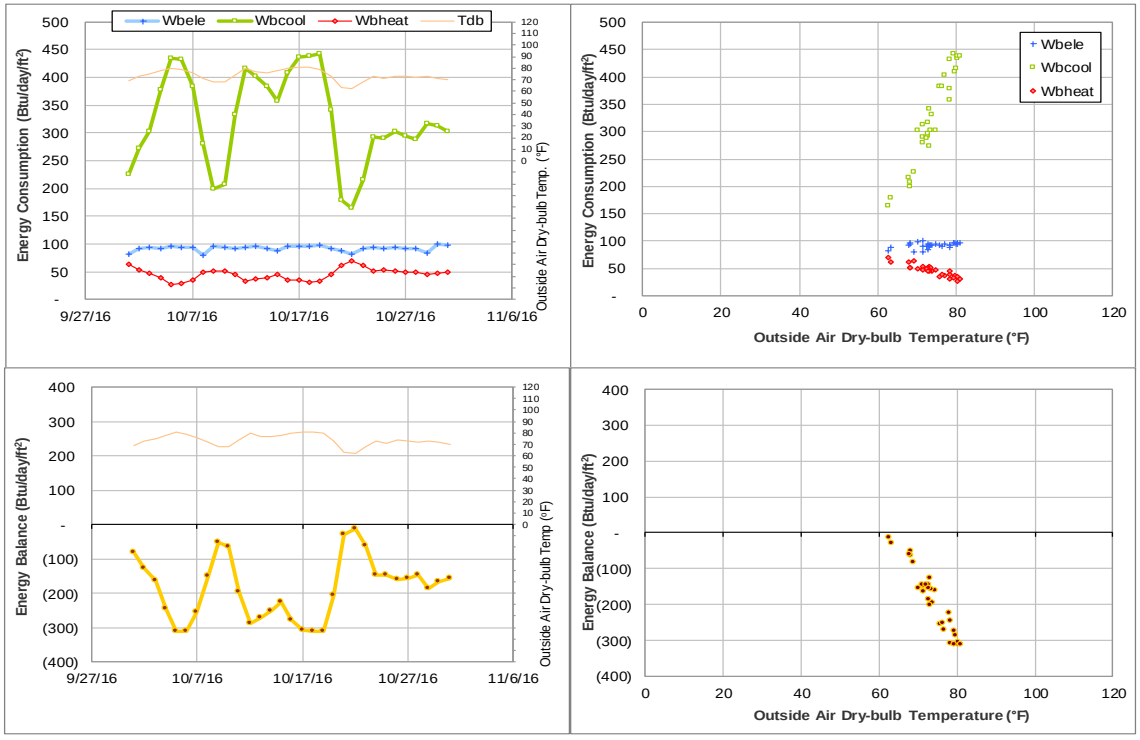


Figure IV-33 Gainer Hall, Leonard Hall and Ash LLC TAMU BLDG # 404, #406, #1403 Energy Balance Plot during October 2016

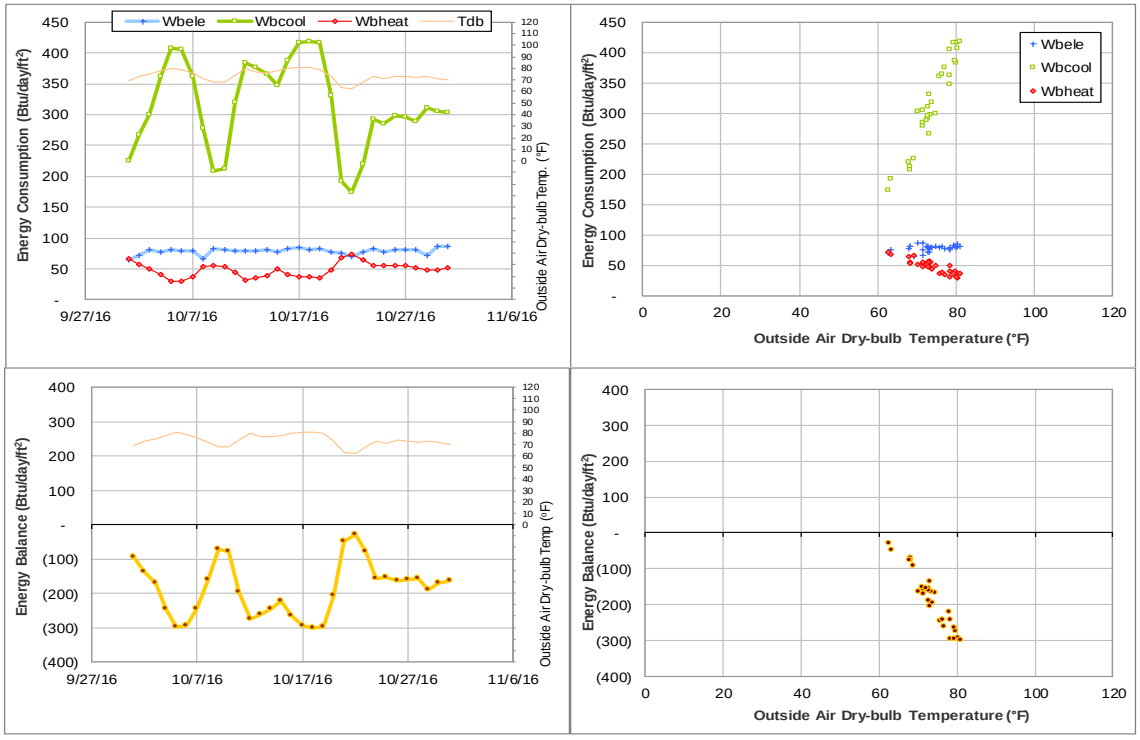


Figure IV-34 Gainer Hall Dorm 5 TAMU BLDG # 404 Energy Balance Plot during October 2016

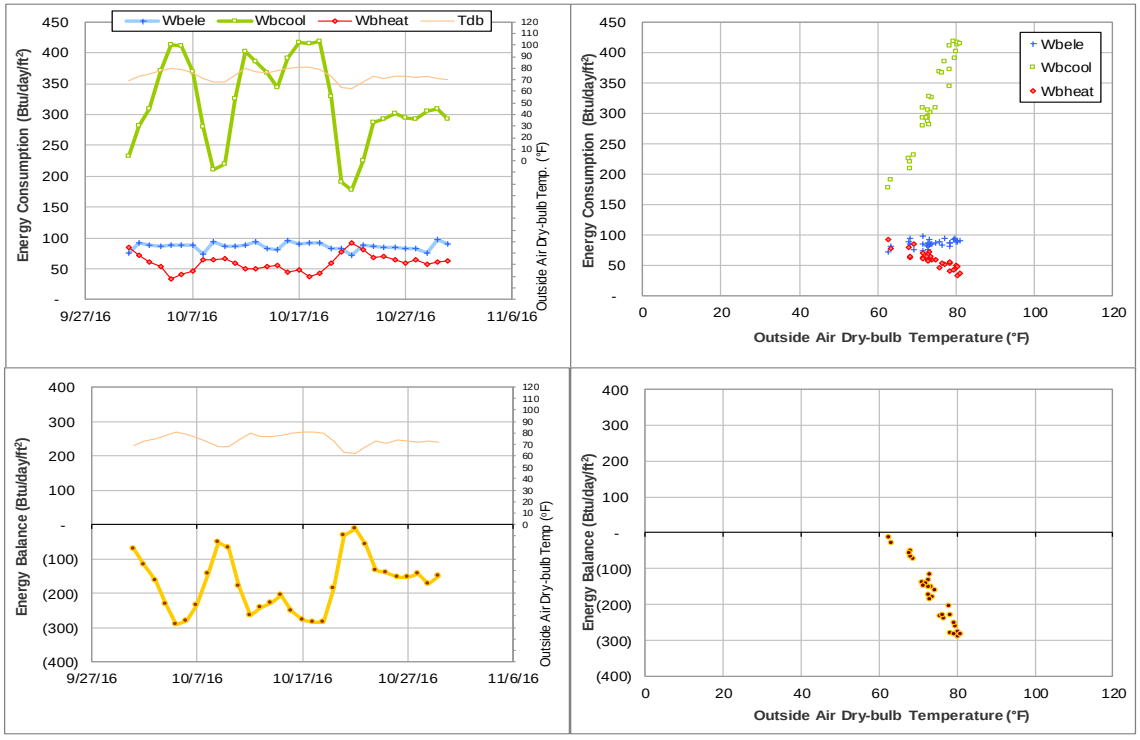


Figure IV-35 Leonard Hall - Dorm 7 TAMU BLDG # 406 Energy Balance Plot during October 2016

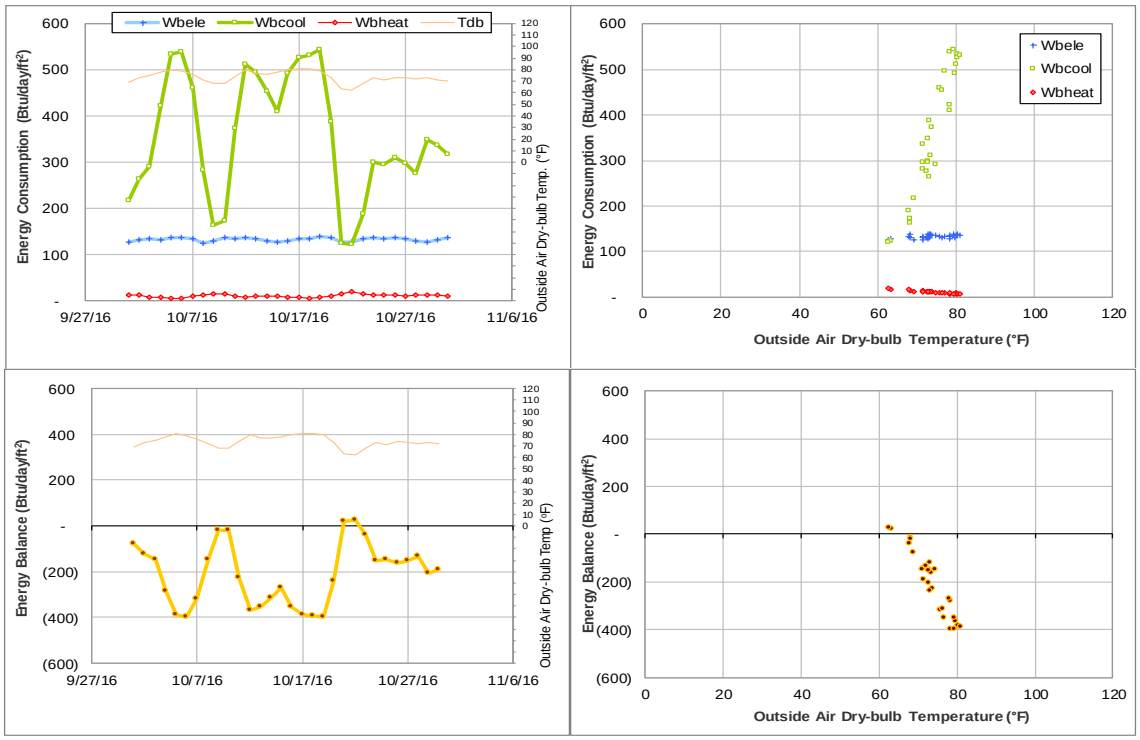


Figure IV-36 H. Grady Ash, Jr. '58 Leadership Learning Center TAMU BLDG # 1403 Energy Balance Plot during October 2016

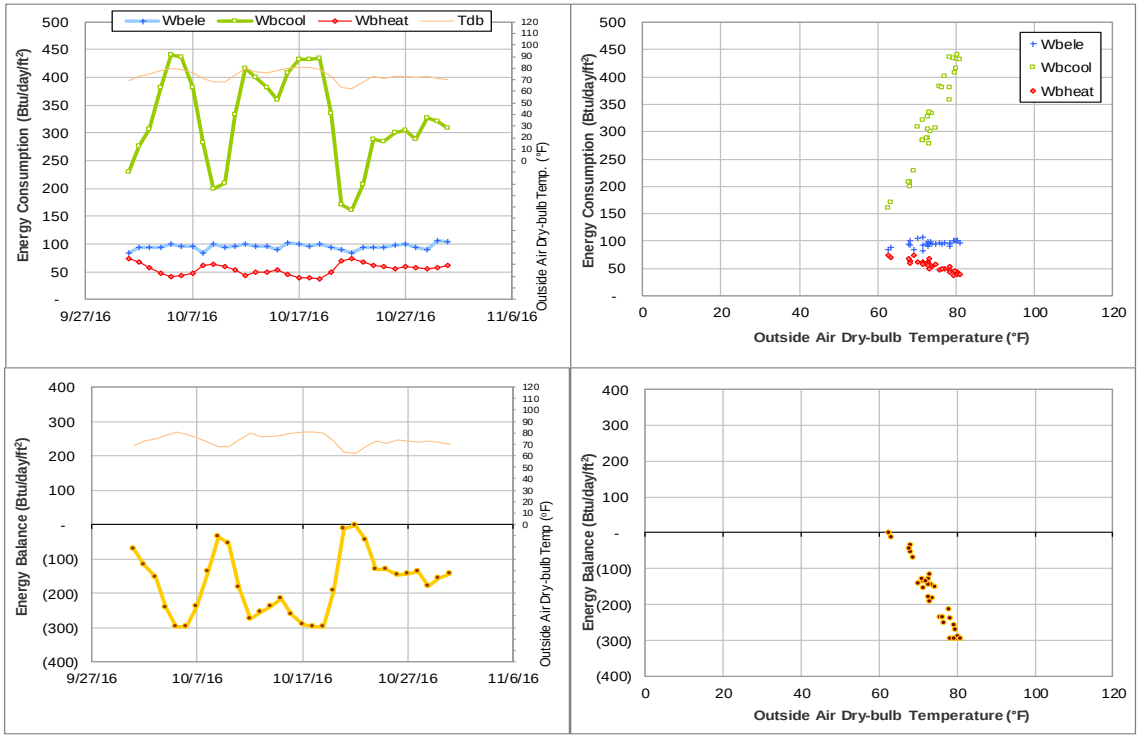


Figure IV-37 Lacy Hall - Dorm 6, Harrell Hall and Leadership Learning Center TAMU BLDG # 405, #407, #1402 Energy Balance Plot during October 2016

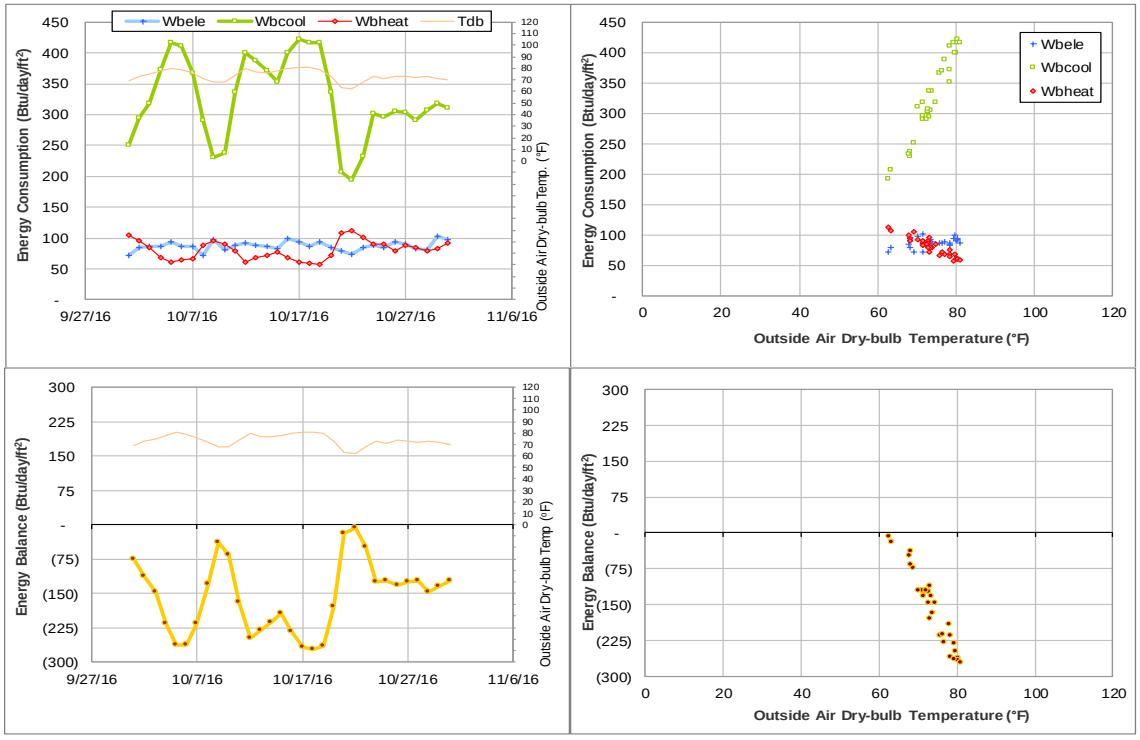


Figure IV-38 Lacy Hall - Dorm 6 TAMU BLDG # 405 Energy Balance Plot during October 2016

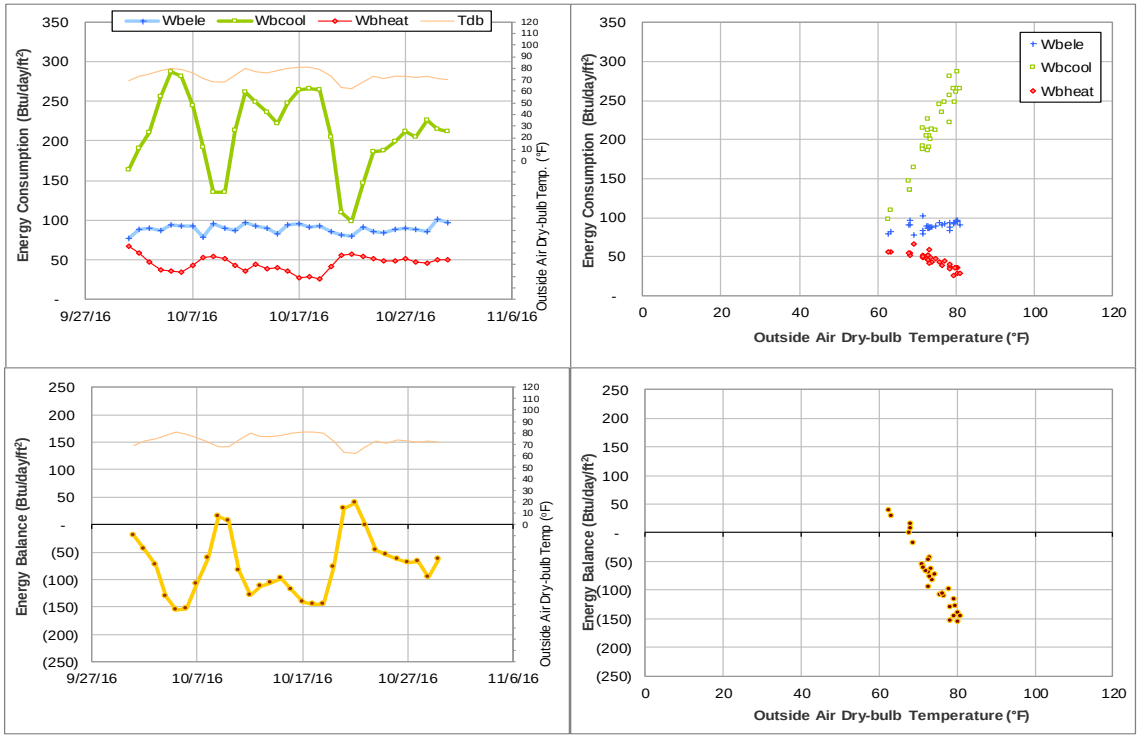


Figure IV-39 Harrell Hall - Dorm 8 TAMU BLDG # 407 Energy Balance Plot during October 2016

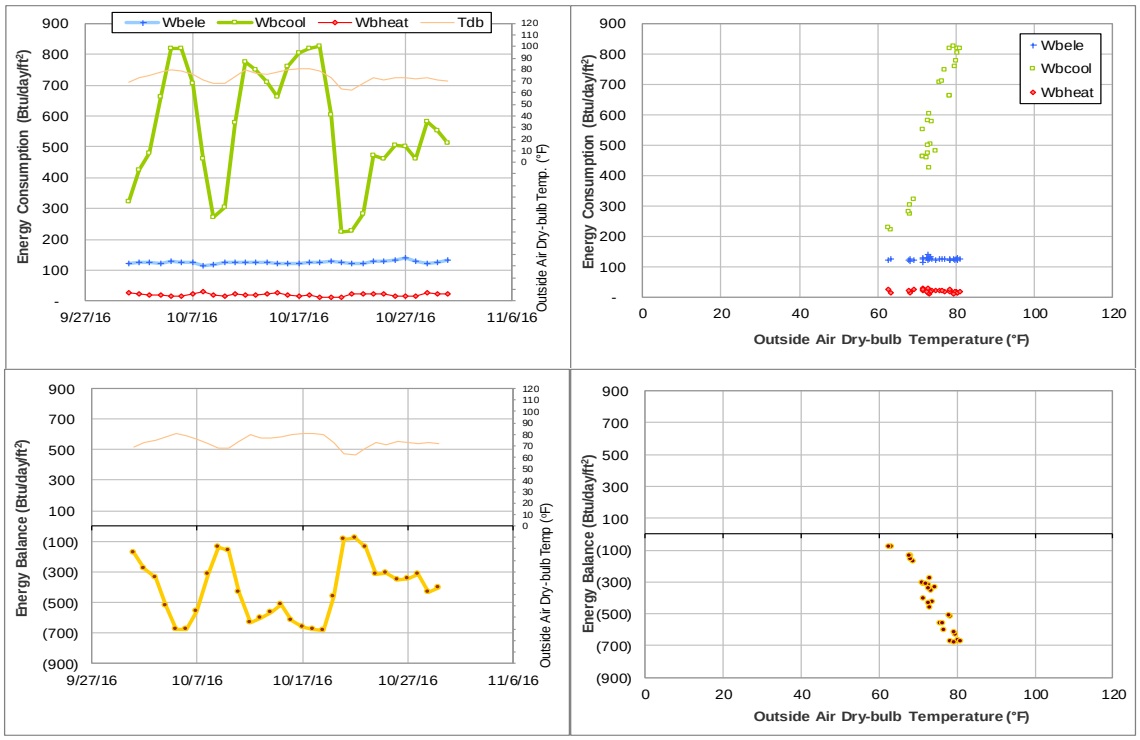


Figure IV-40 Buzbee Leadership Learning Center TAMU BLDG # 1402 Energy Balance Plot during October 2016

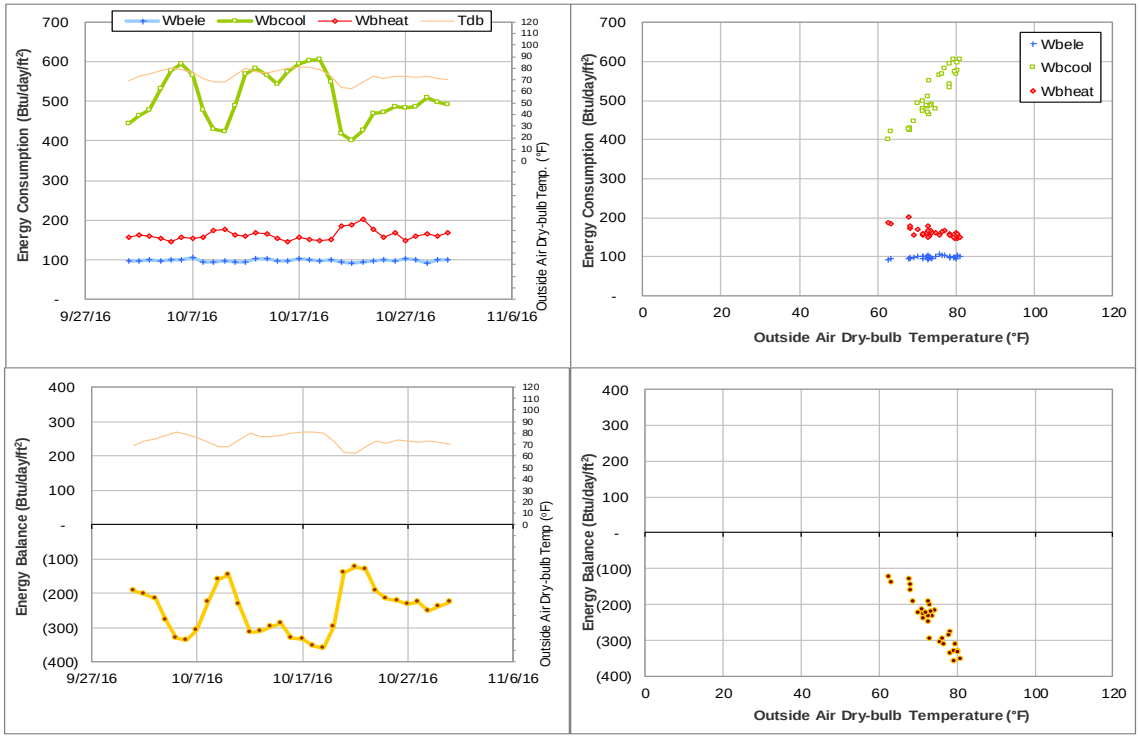


Figure IV-41 Moses Residence Hall TAMU BLDG # 412 Energy Balance Plot during October 2016

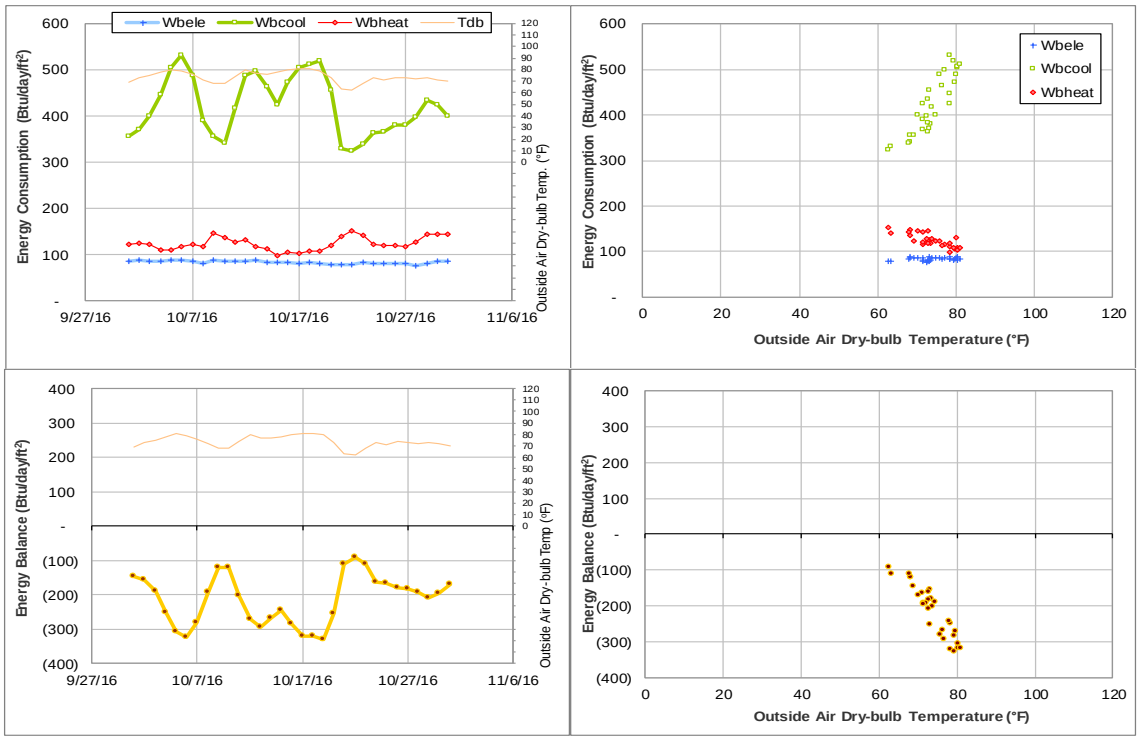


Figure IV-42 Davis-Gary Residence Hall TAMU BLDG # 415 Energy Balance Plot during October 2016

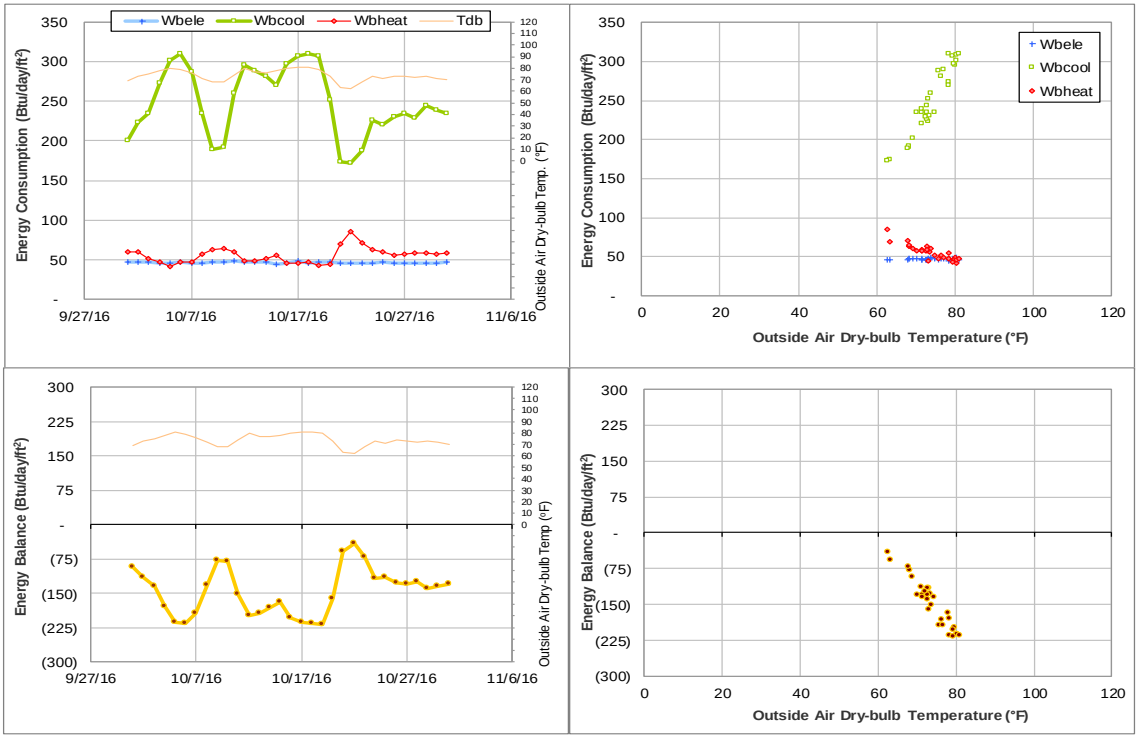


Figure IV-43 Legett Residence Hall TAMU BLDG # 419 Energy Balance Plot during October 2016

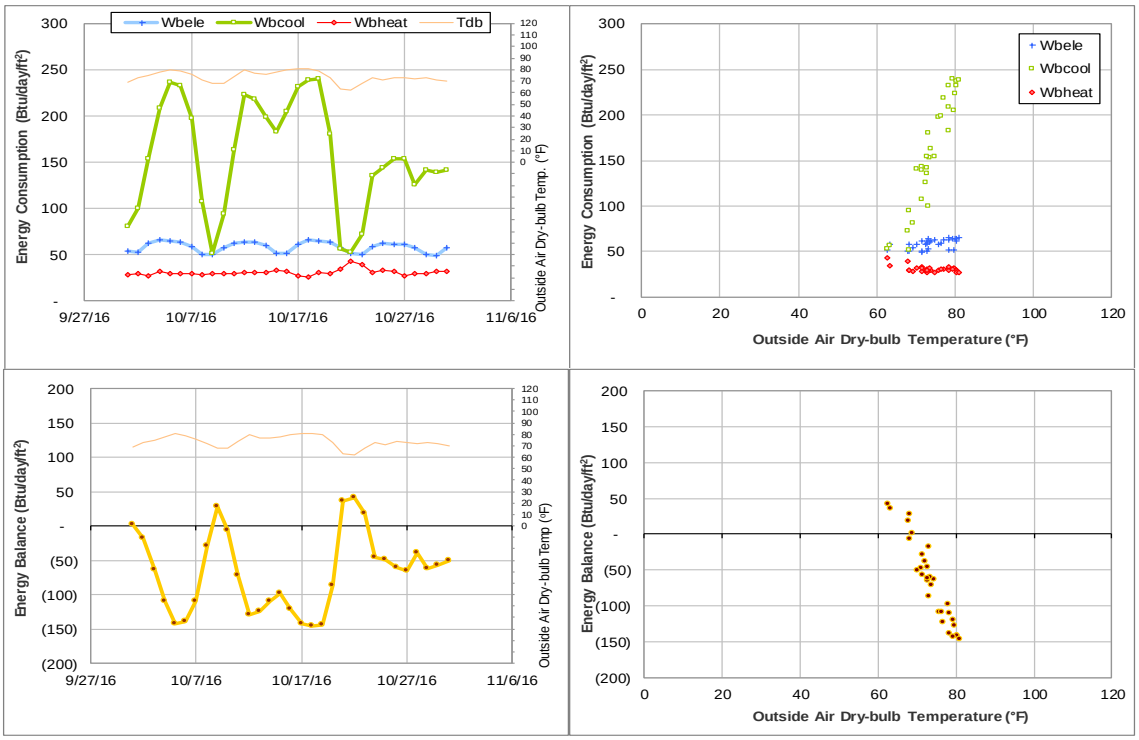


Figure IV-44 Milner Hall TAMU BLDG # 420 Energy Balance Plot during October 2016

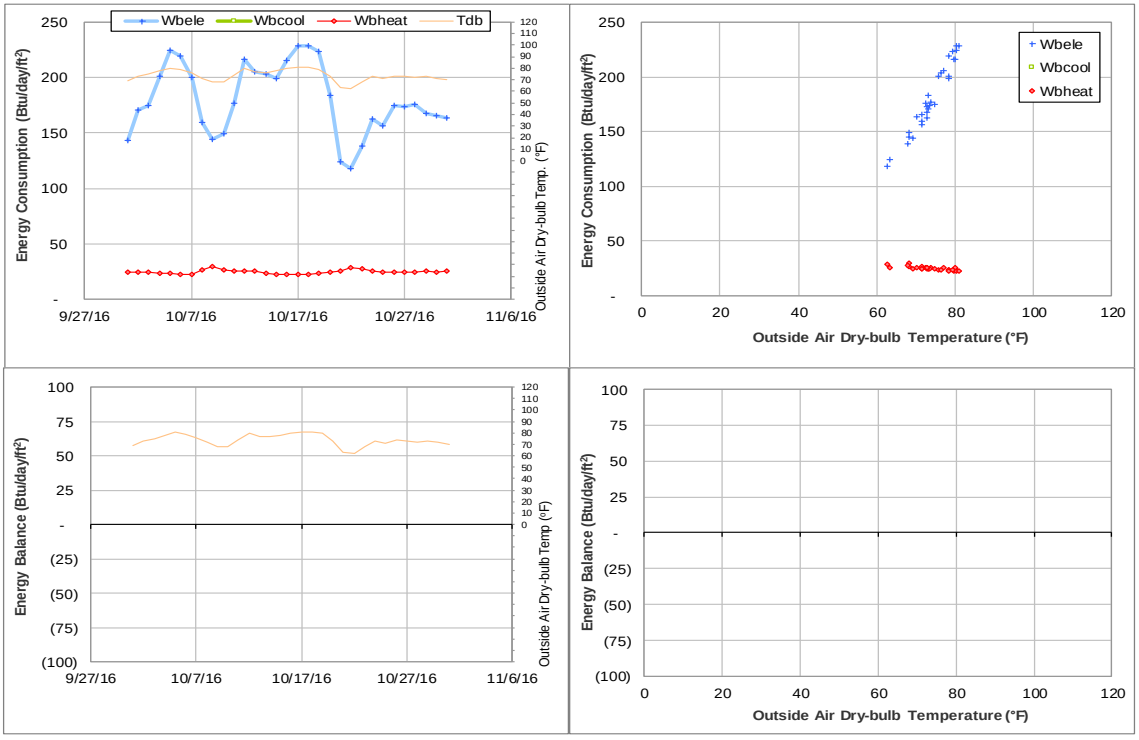


Figure IV-45 Walton Residence Hall TAMU BLDG # 422 Energy Balance Plot during October 2016

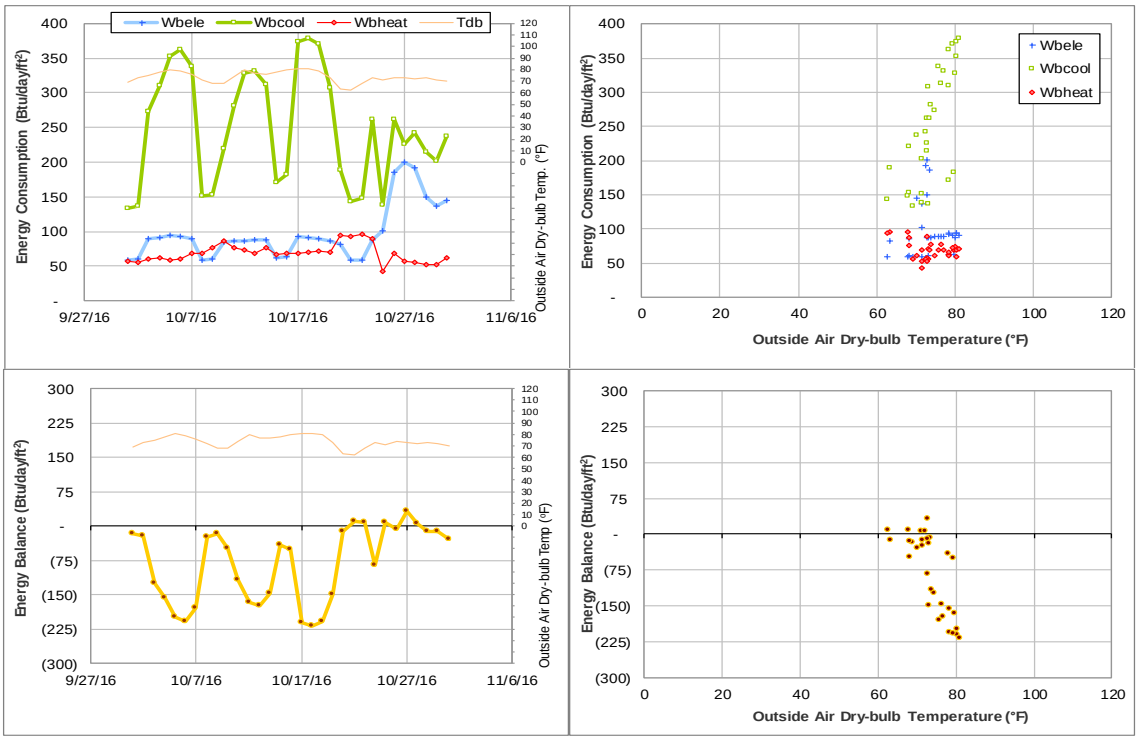


Figure IV-46 Hotard Hall TAMU BLDG # 424 Energy Balance Plot during October 2016

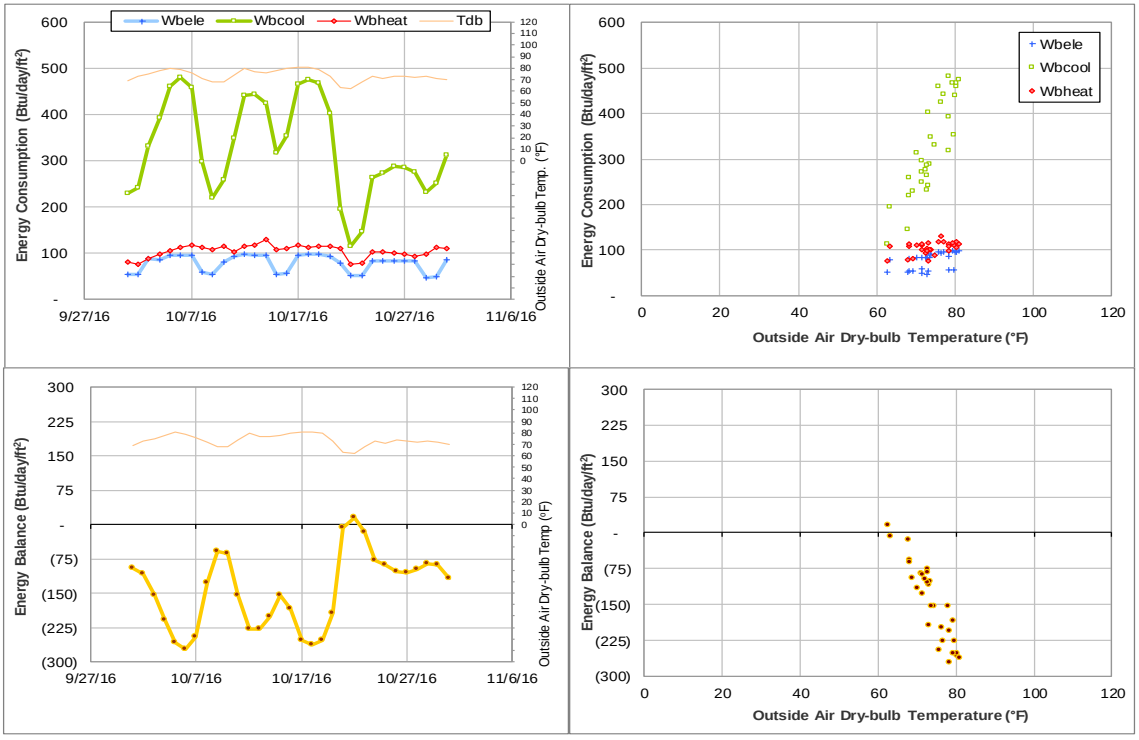


Figure IV-47 Henderson Hall TAMU BLDG # 425 Energy Balance Plot during October 2016

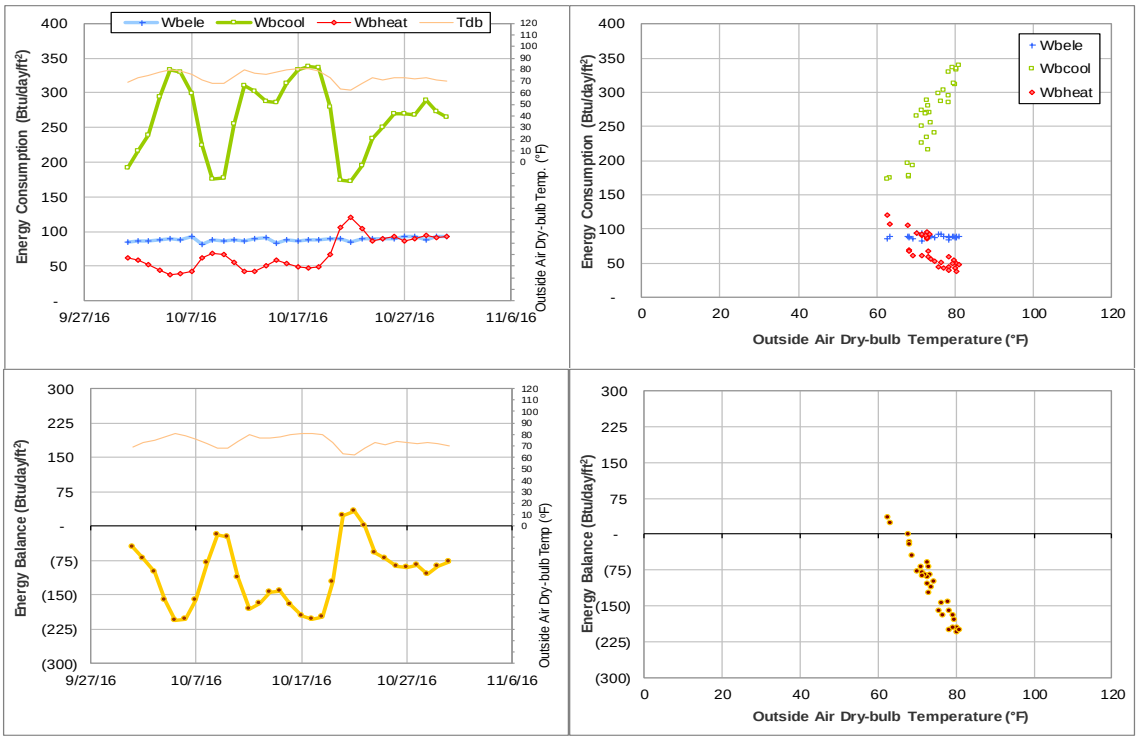


Figure IV-48 FHK Complex TAMU BLDG # 426 Energy Balance Plot during October 2016

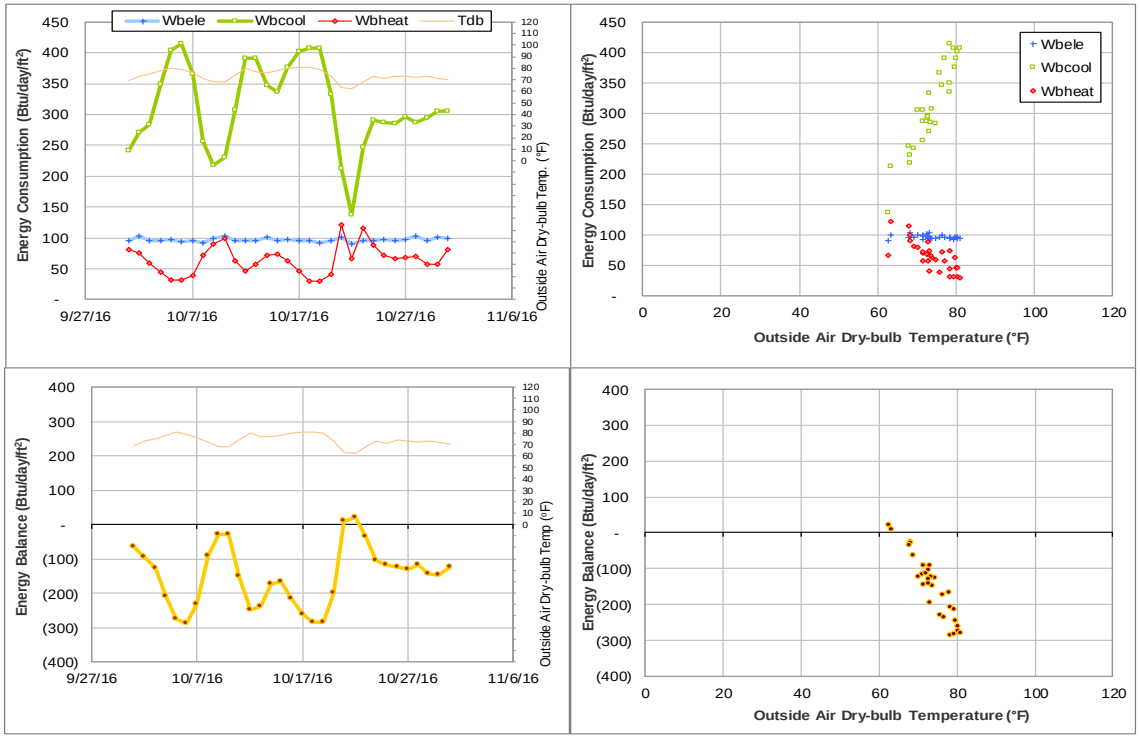


Figure IV-49 Schumacher Residence Hall TAMU BLDG # 430 Energy Balance Plot during October 2016

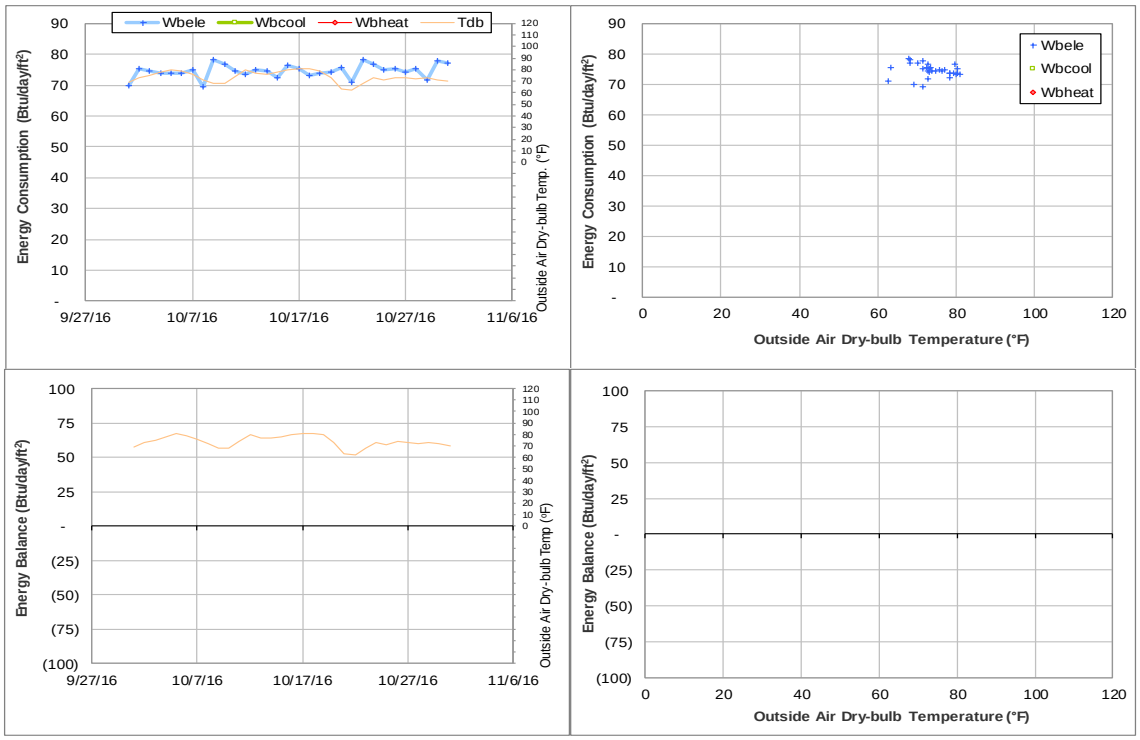


Figure IV-50 Mosher Commons Krueger Dunn Aston TAMU BLDG # 433, #440, #441, #442, #447 Energy Balance Plot during October 2016

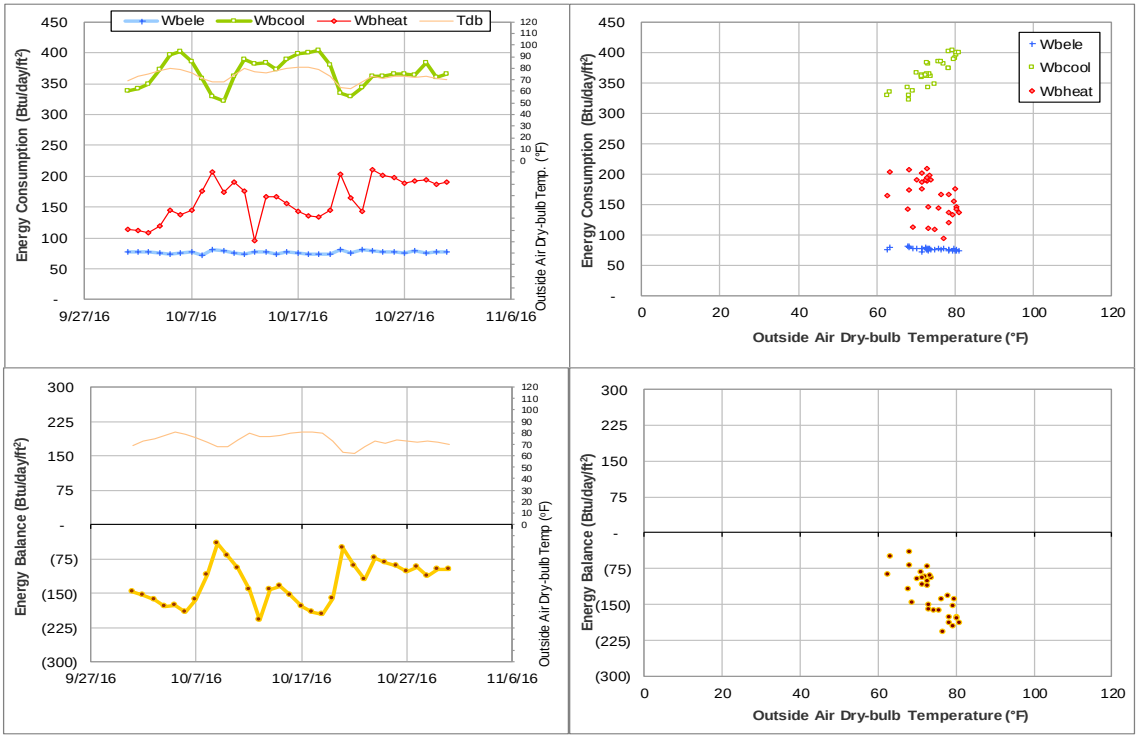


Figure IV-51 Mosher Residence Hall TAMU BLDG # 433 Energy Balance Plot during October 2016

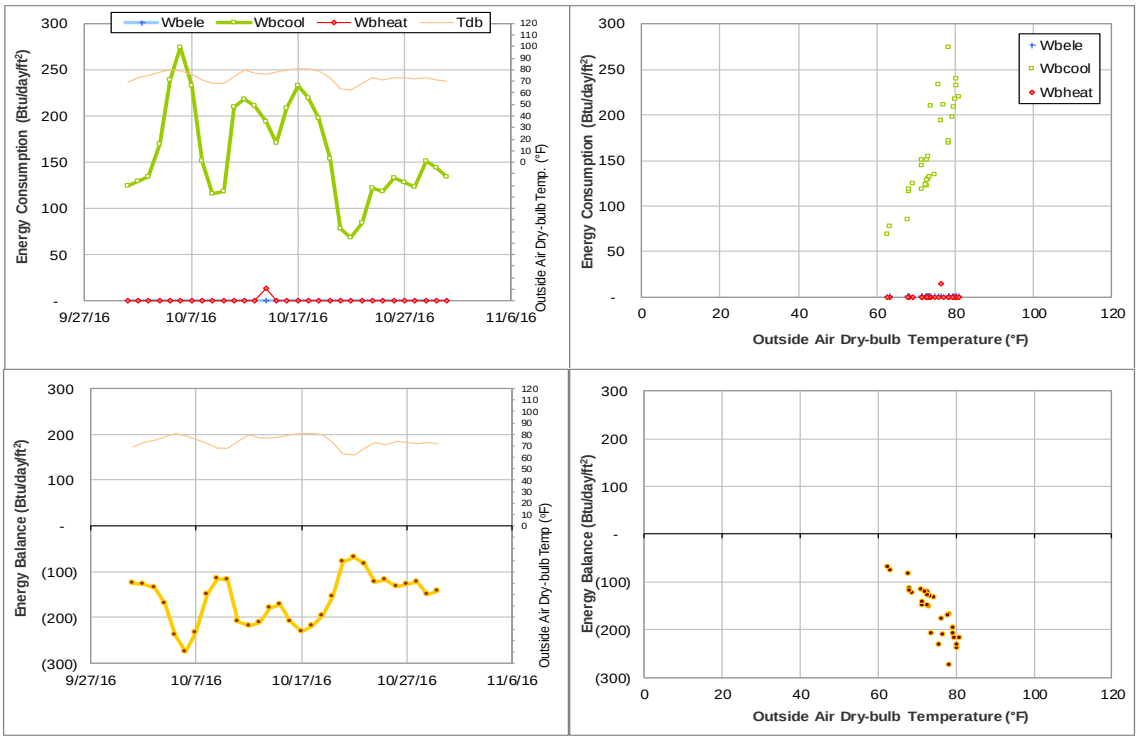


Figure IV-52 Commons Hall TAMU BLDG # 440 Energy Balance Plot during October 2016

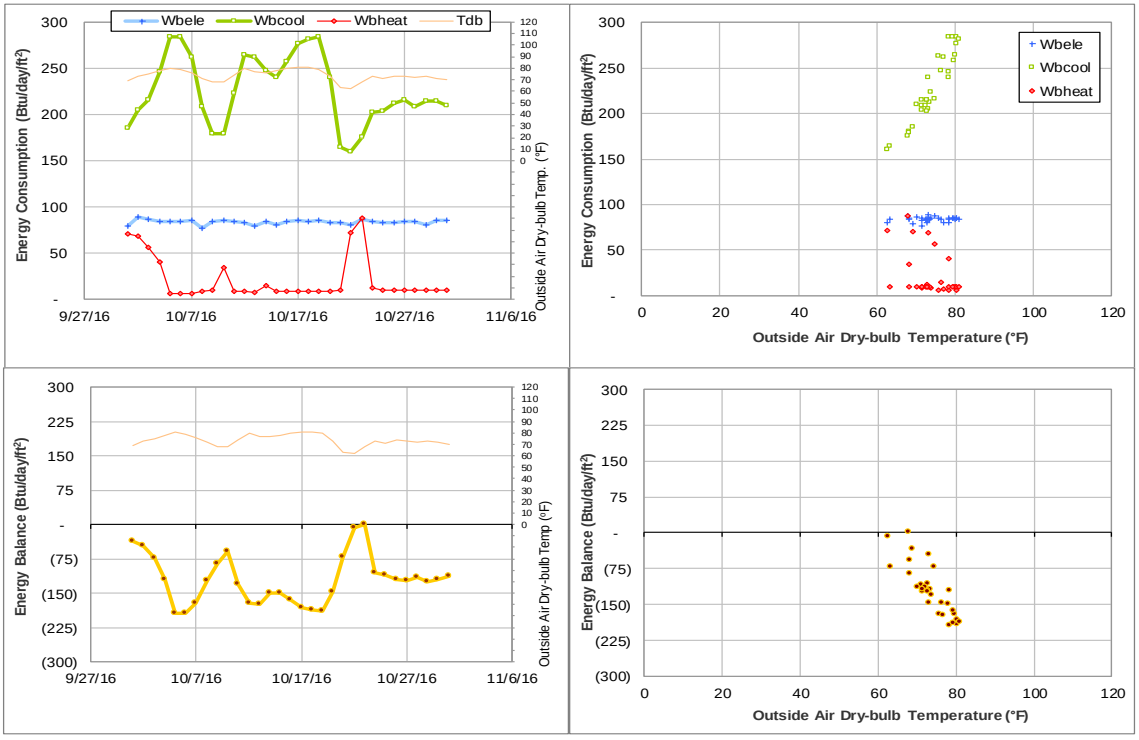


Figure IV-53 Krueger Residence Hall TAMU BLDG # 441 Energy Balance Plot during October 2016

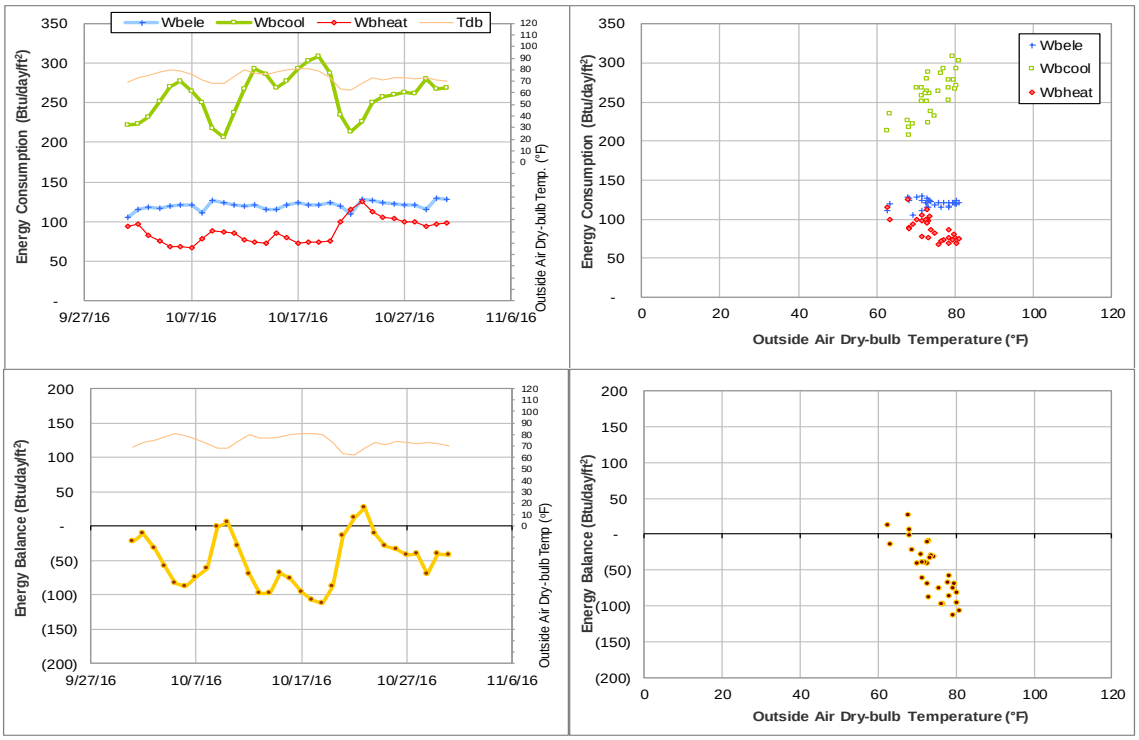


Figure IV-54 Dunn Residence Hall TAMU BLDG # 442 Energy Balance Plot during October 2016

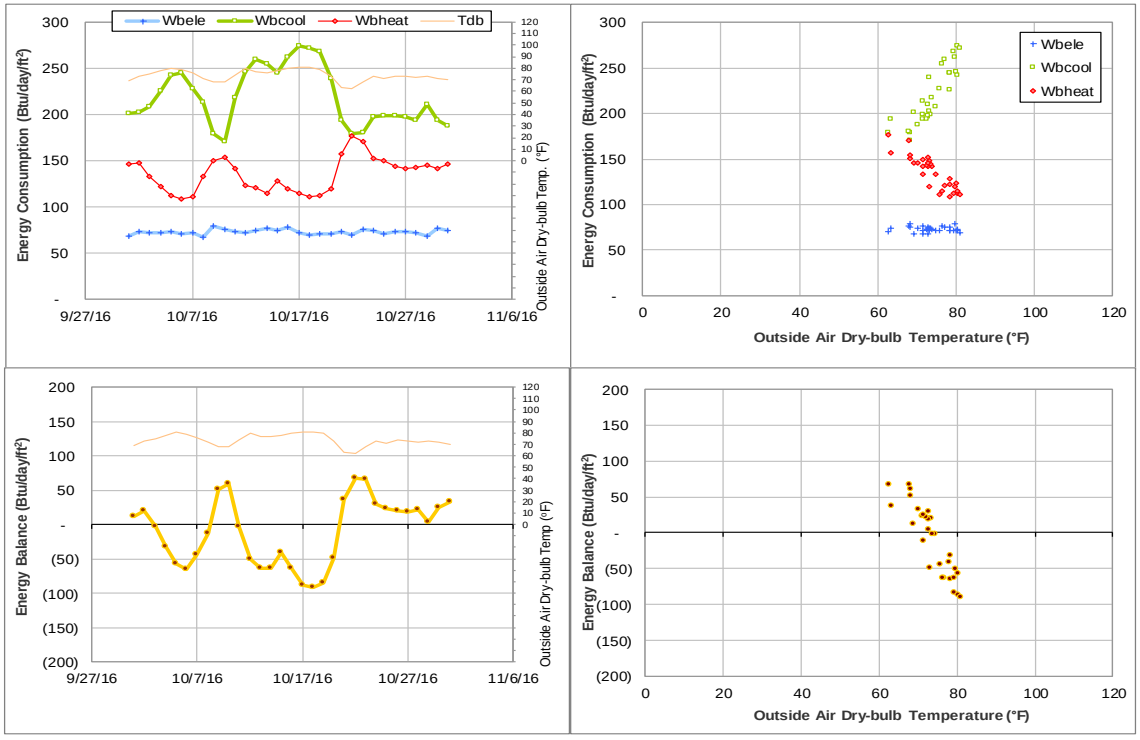


Figure IV-55 Aston Residence Hall TAMU BLDG # 447 Energy Balance Plot during October 2016

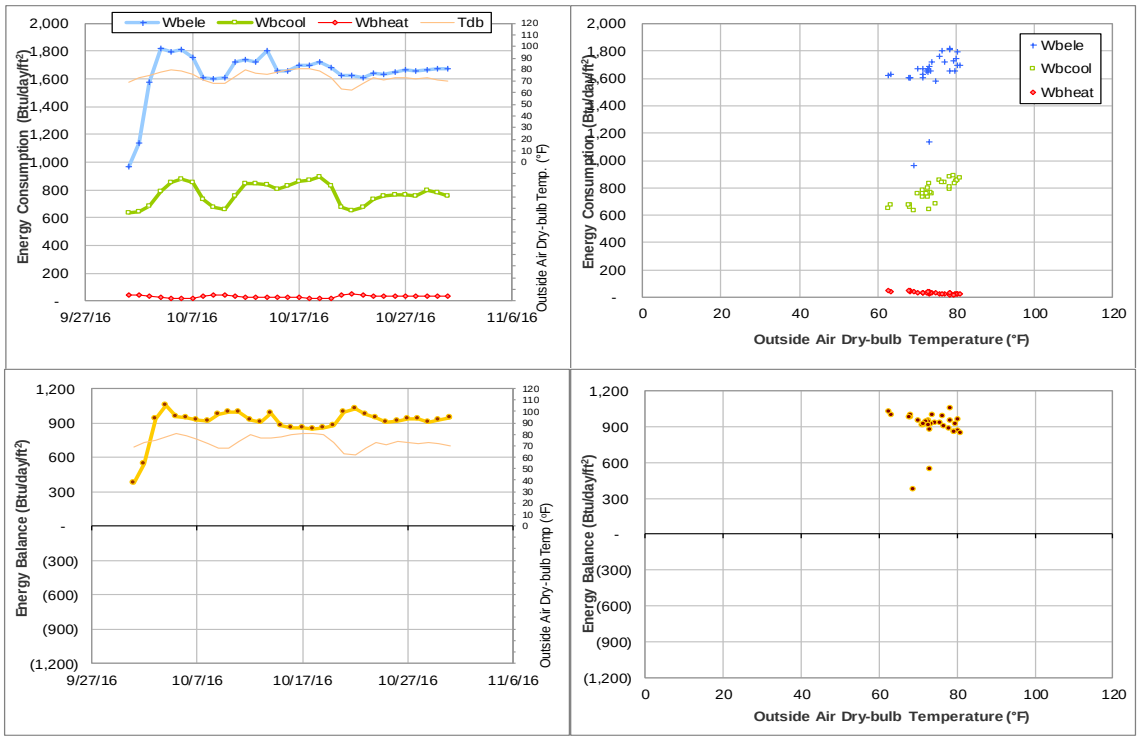


Figure IV-56 Luedecke Building (Cyclotron) TAMU BLDG # 434 Energy Balance Plot during October 2016

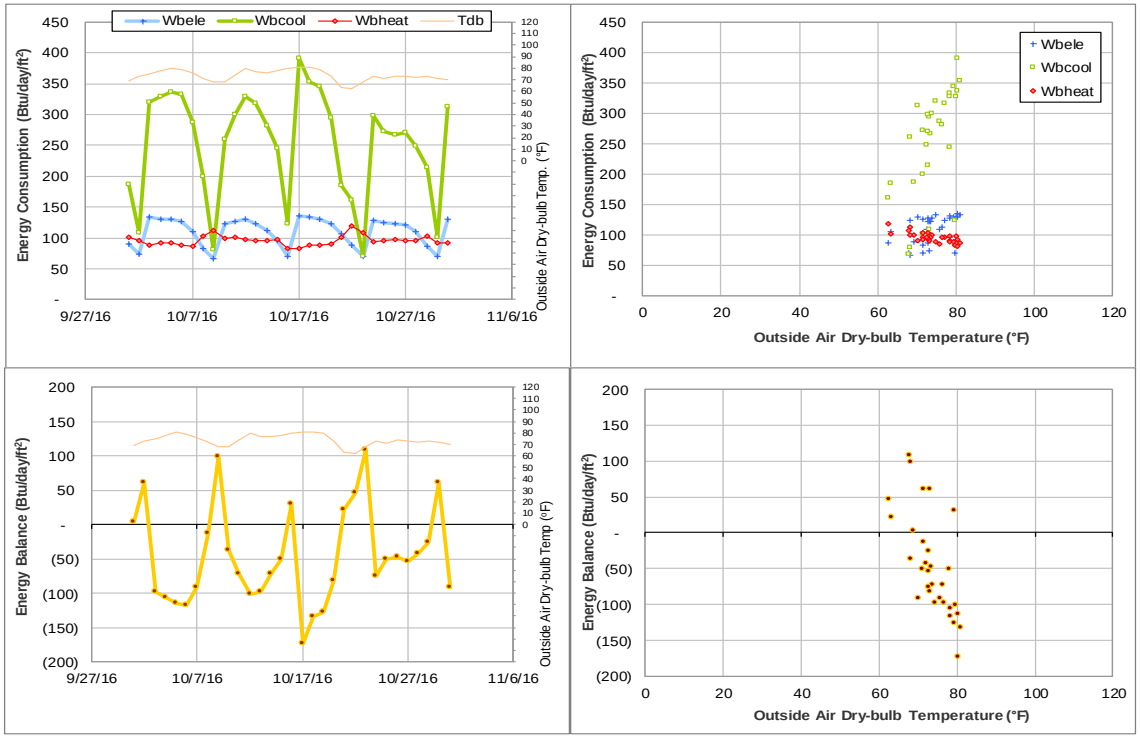


Figure IV-57 Harrington Education Center Office Tower TAMU BLDG # 435 Energy Balance Plot during October 2016

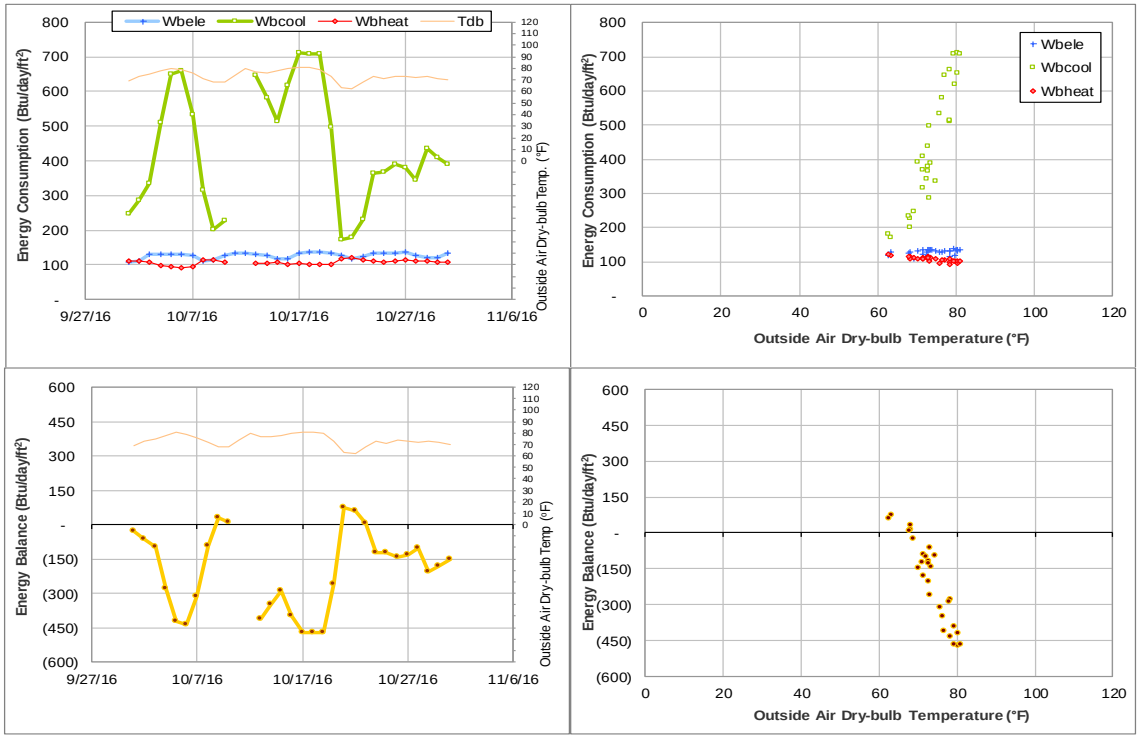


Figure IV-58 Reed-McDonald and Engineering Innovation Center TAMU BLDG # 436, #499 Energy Balance Plot during October 2016

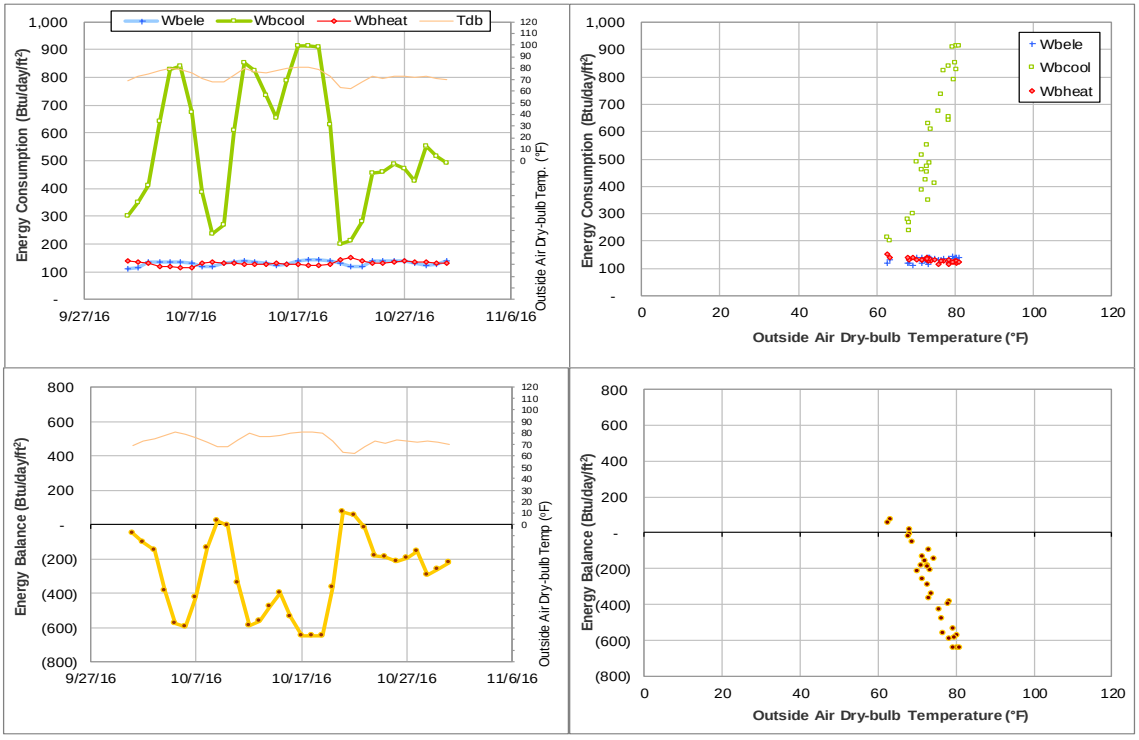


Figure IV-59 Reed-McDonald Building TAMU BLDG # 436 Energy Balance Plot during October 2016

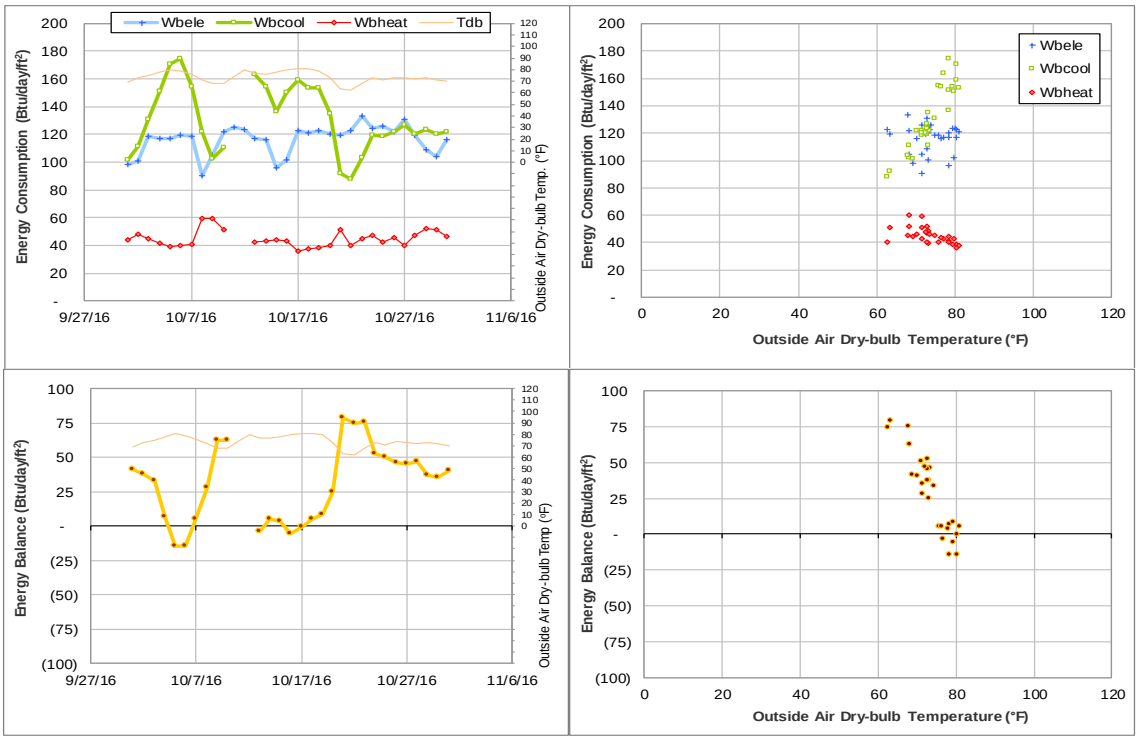


Figure IV-60 Engineering Innovation Center TAMU BLDG # 499 Energy Balance Plot during October 2016

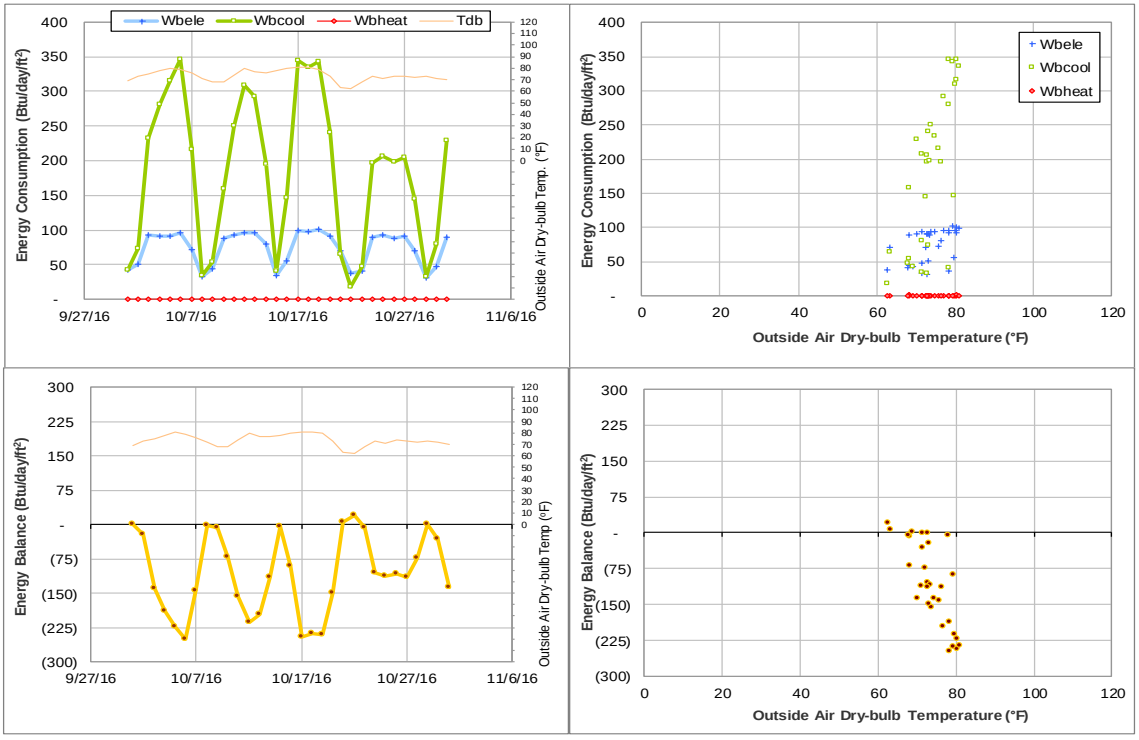


Figure IV-61 Harrington Education Center Classroom Building TAMU BLDG # 438 Energy Balance Plot during October 2016

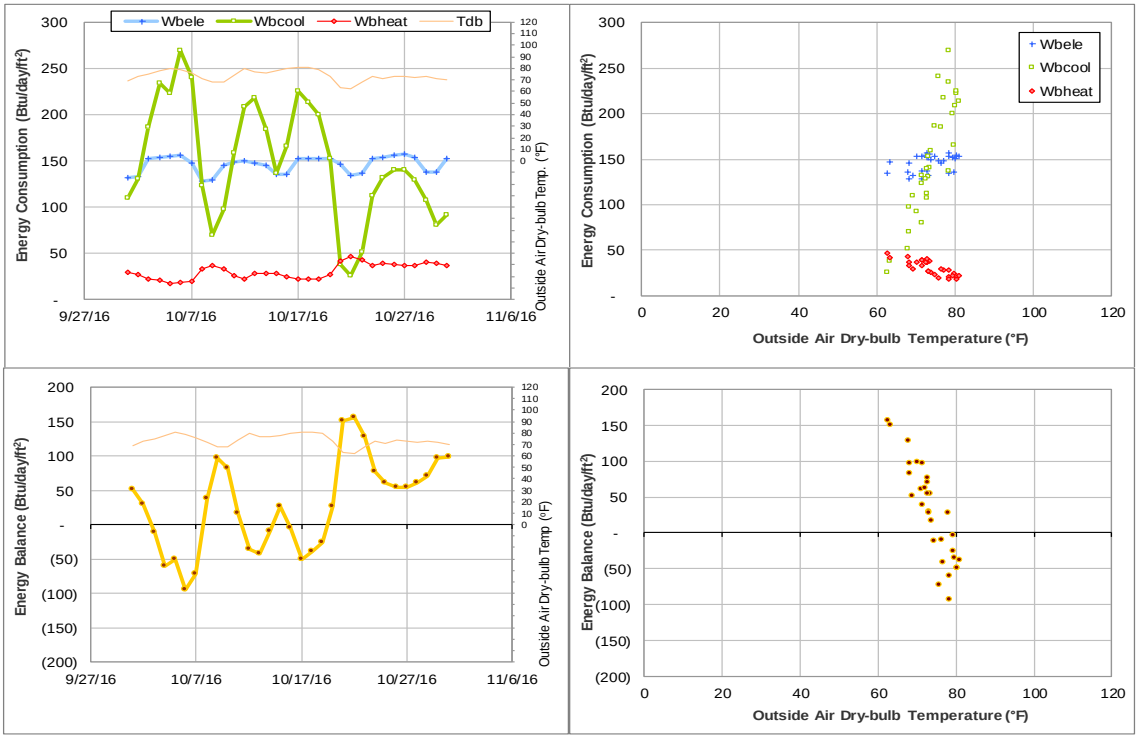


Figure IV-62 Oceanography & Meteorology Building TAMU BLDG # 443 Energy Balance Plot during October 2016

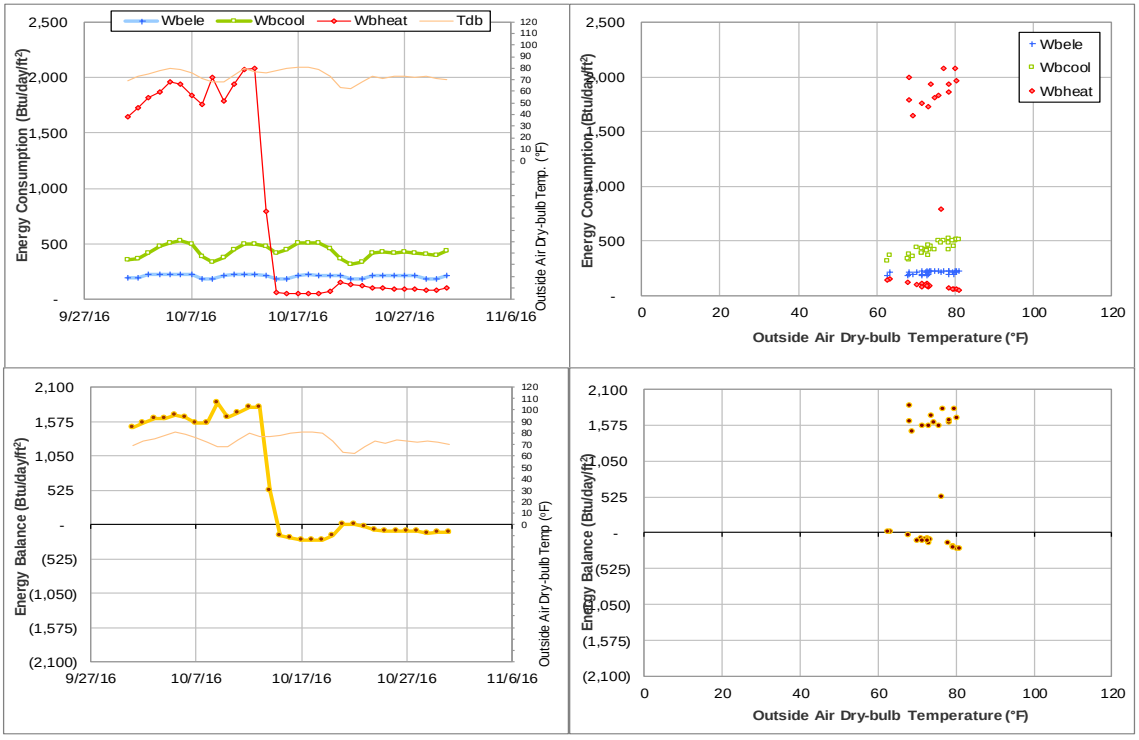


Figure IV-63 Peterson Building TAMU BLDG # 444 Energy Balance Plot during October 2016

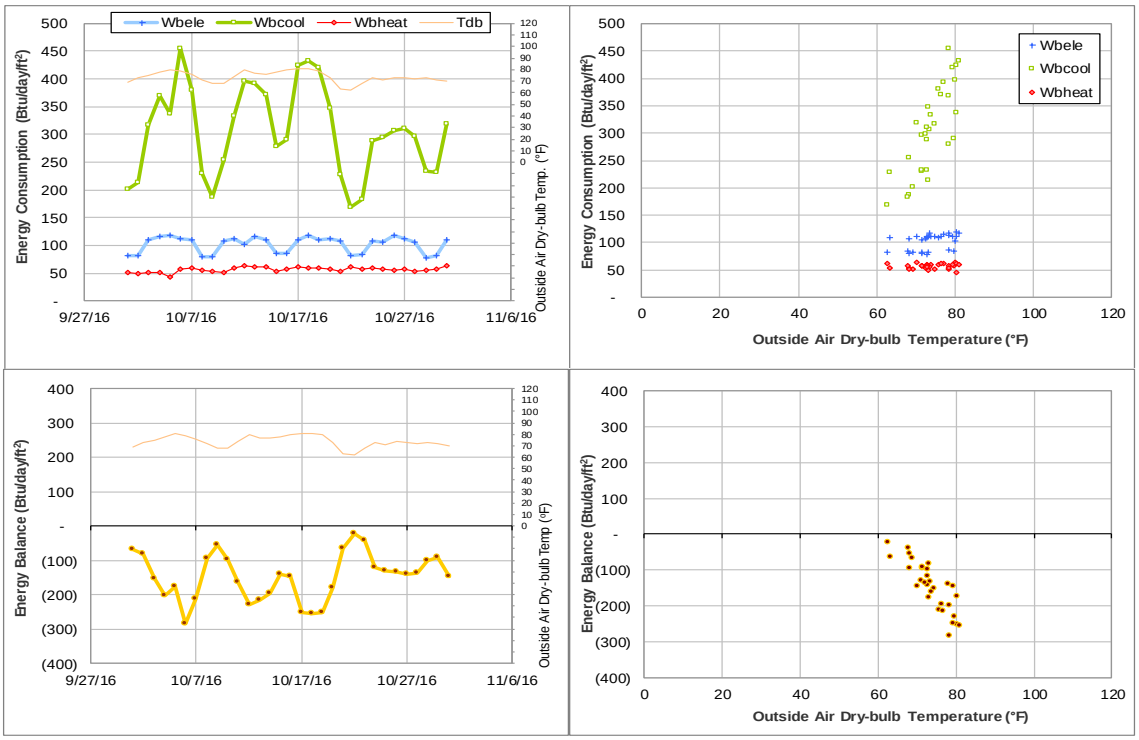


Figure IV-64 Teague Research Center and DPC Annex TAMU BLDG # 445, #517 Energy Balance Plot during October 2016

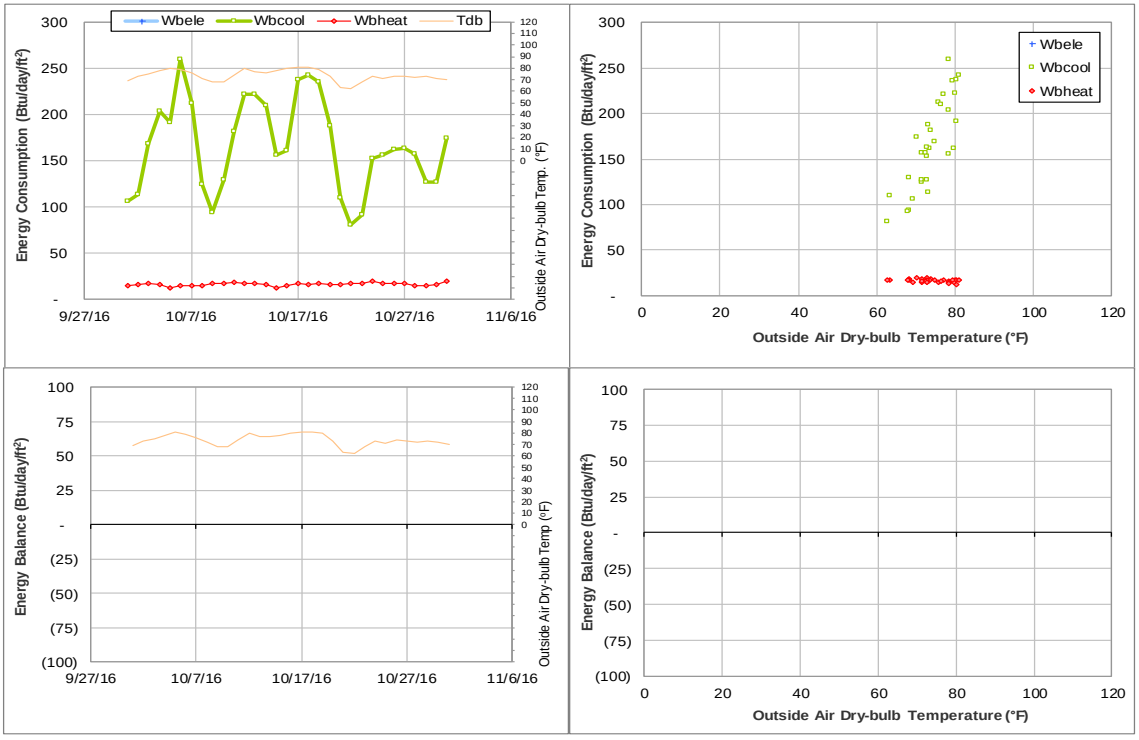


Figure IV-65 Teague Research Center TAMU BLDG # 445 Energy Balance Plot during October 2016

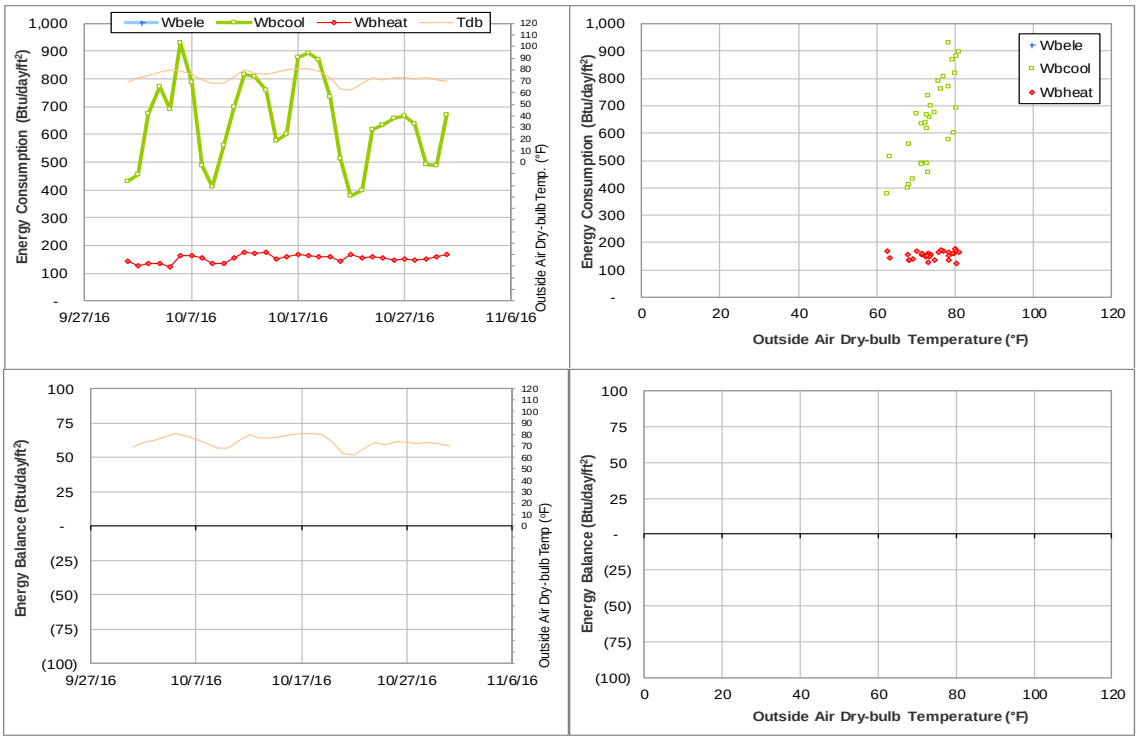


Figure IV-66 DPC Annex TAMU BLDG # 517 Energy Balance Plot during October 2016

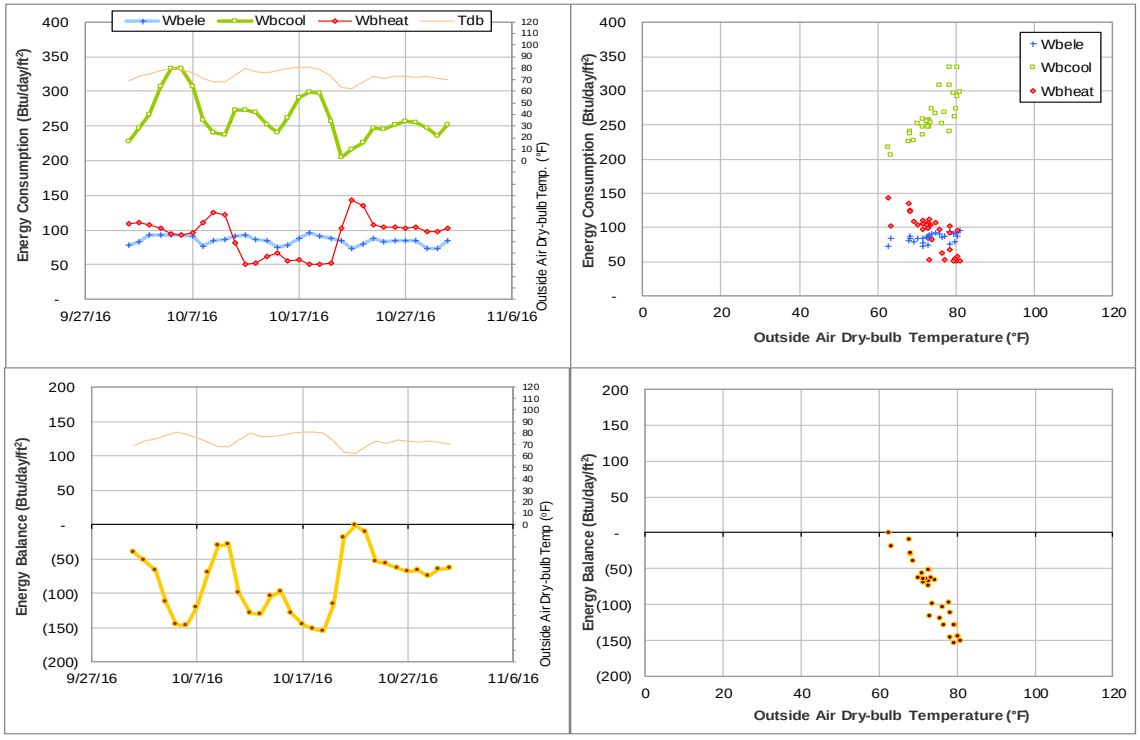


Figure IV-67 Rudder Tower and Theatre Complex TAMU BLDG # 446 Energy Balance Plot during October 2016

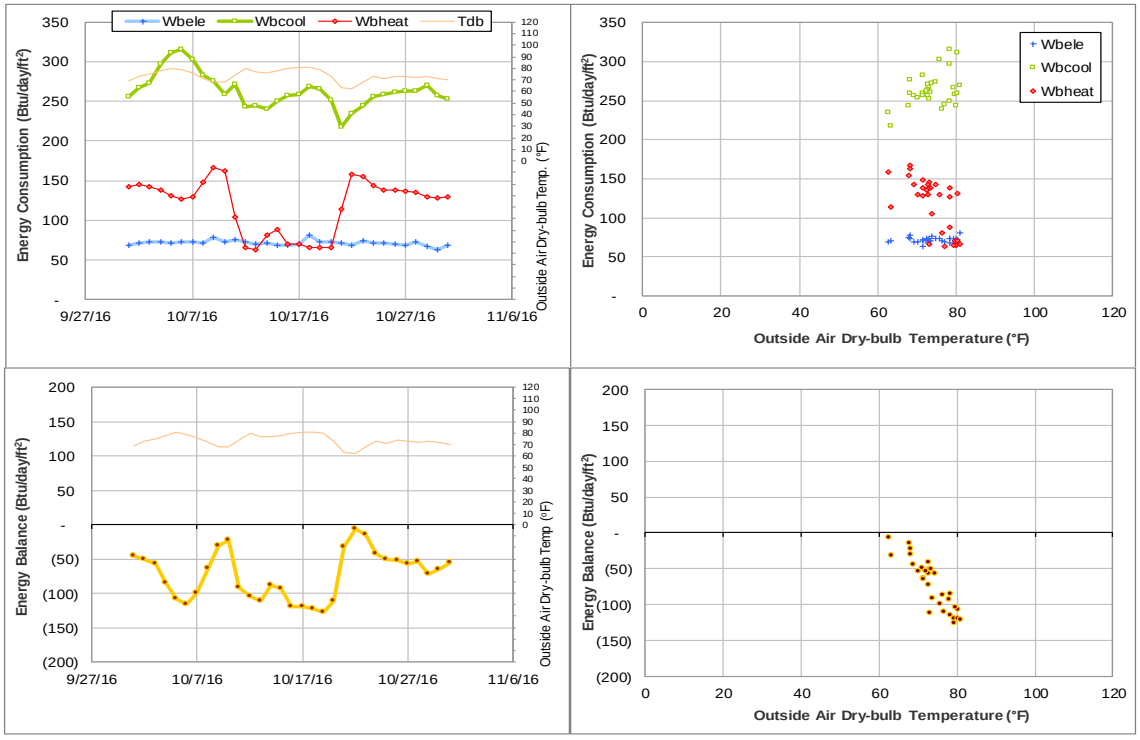


Figure IV-68 Rudder Theatre Complex TAMU BLDG # 446 Energy Balance Plot during October 2016

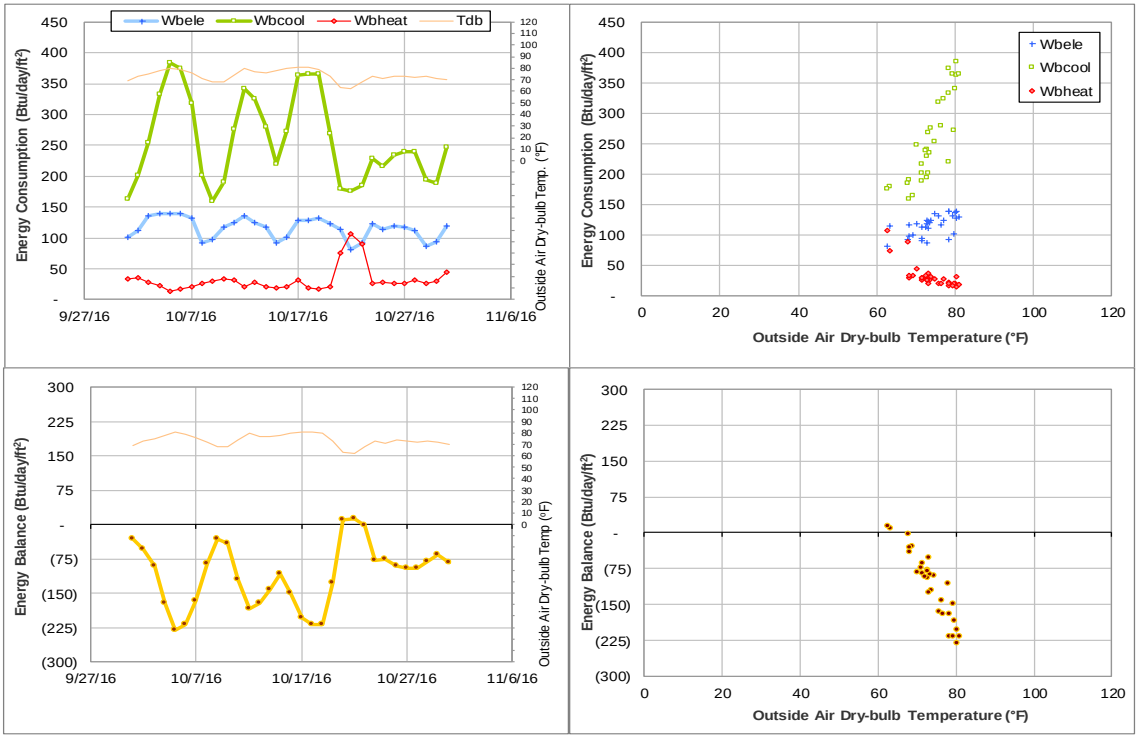


Figure IV-69 Rudder Tower TAMU BLDG # 446 Energy Balance Plot during October 2016

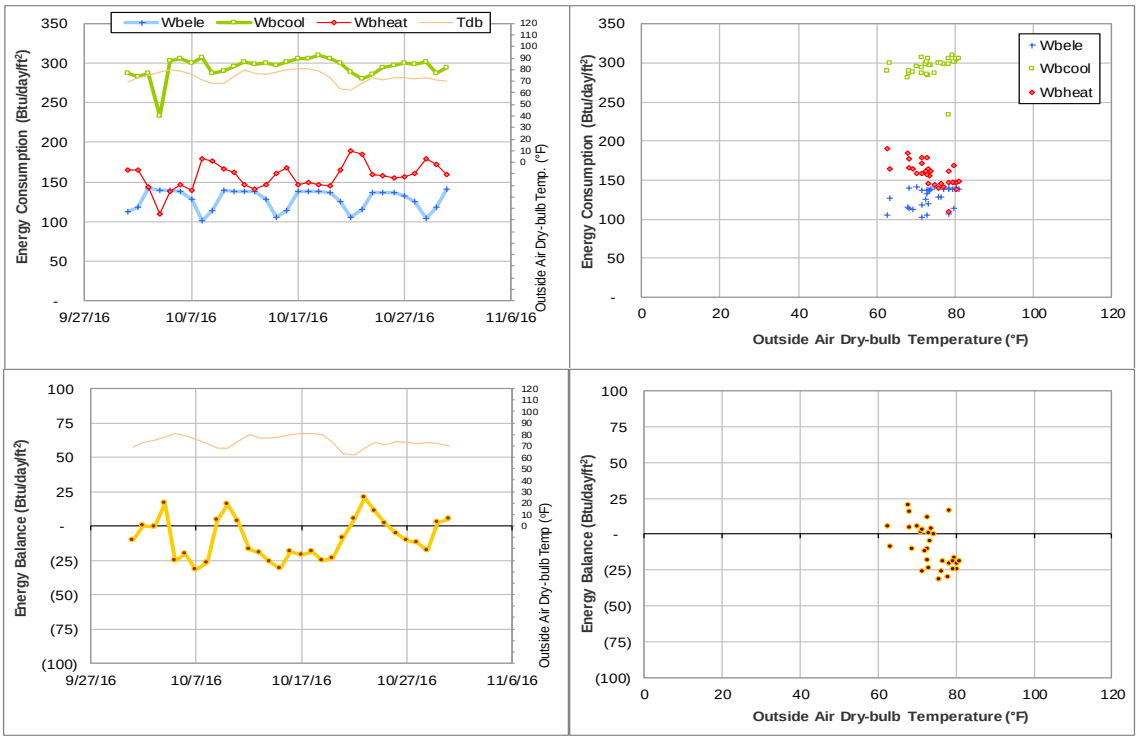


Figure IV-70 Adams Band Hall TAMU BLDG # 448 Energy Balance Plot during October 2016

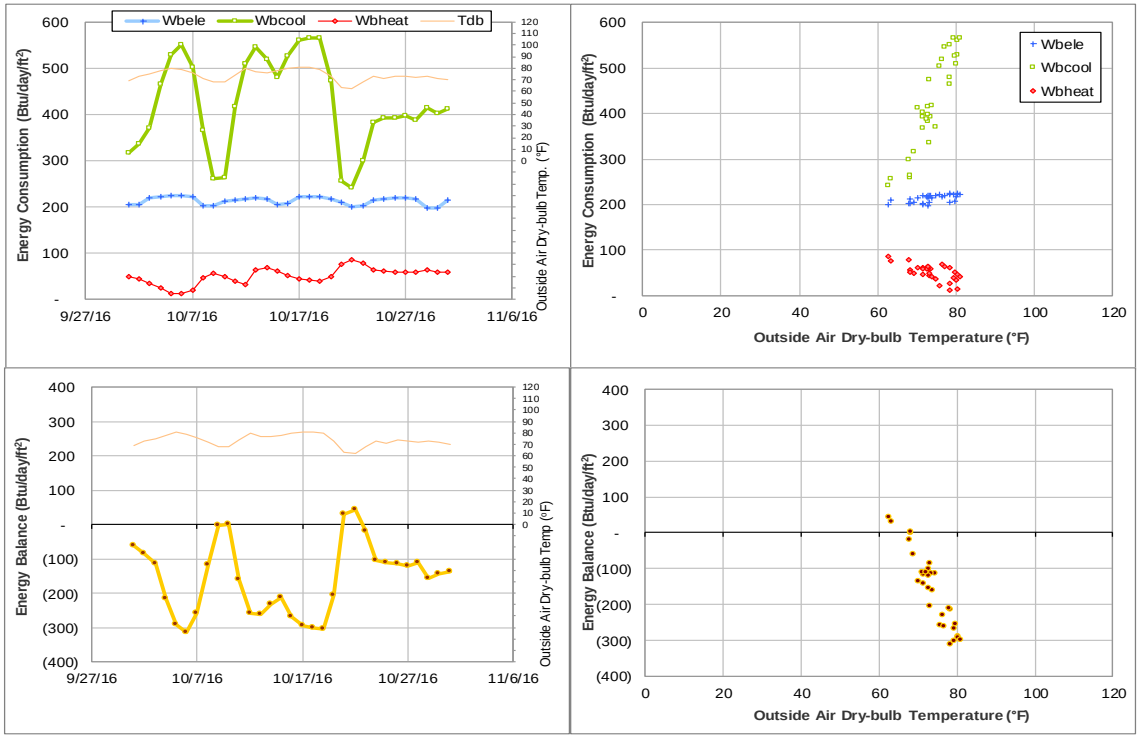


Figure IV-71 Biological Sciences Building - West TAMU BLDG # 449 Energy Balance Plot during October 2016

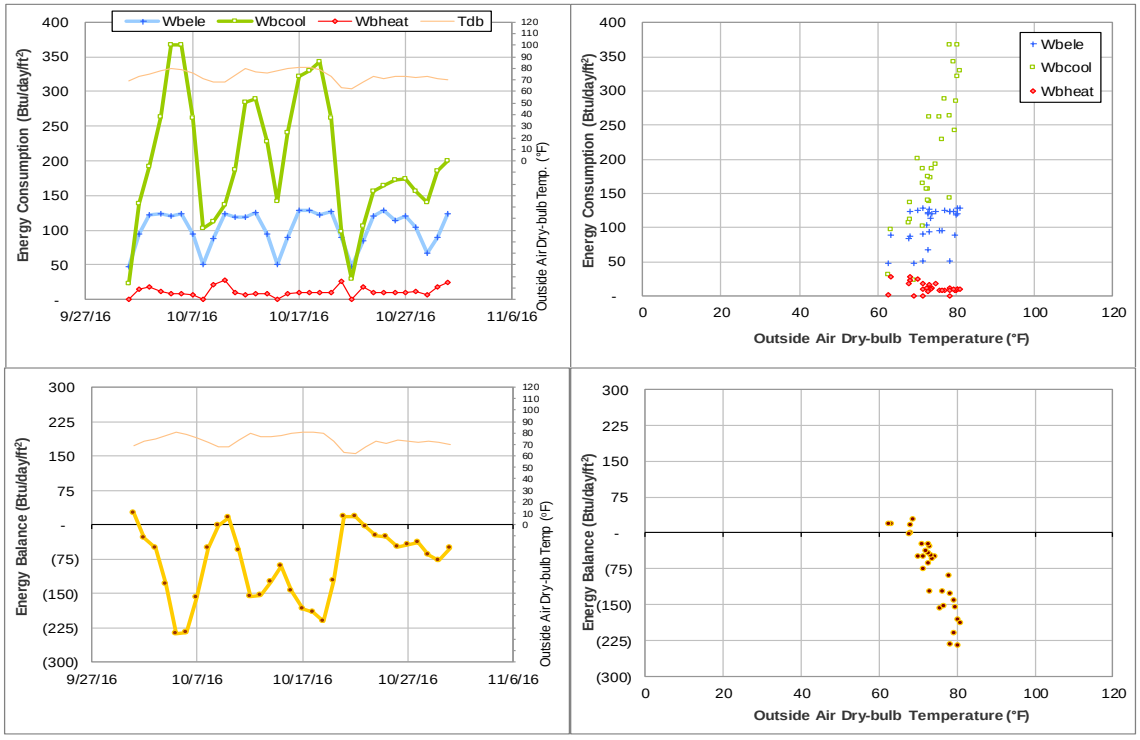


Figure IV-72 Duncan Dining Hall TAMU BLDG # 450 Energy Balance Plot during October 2016

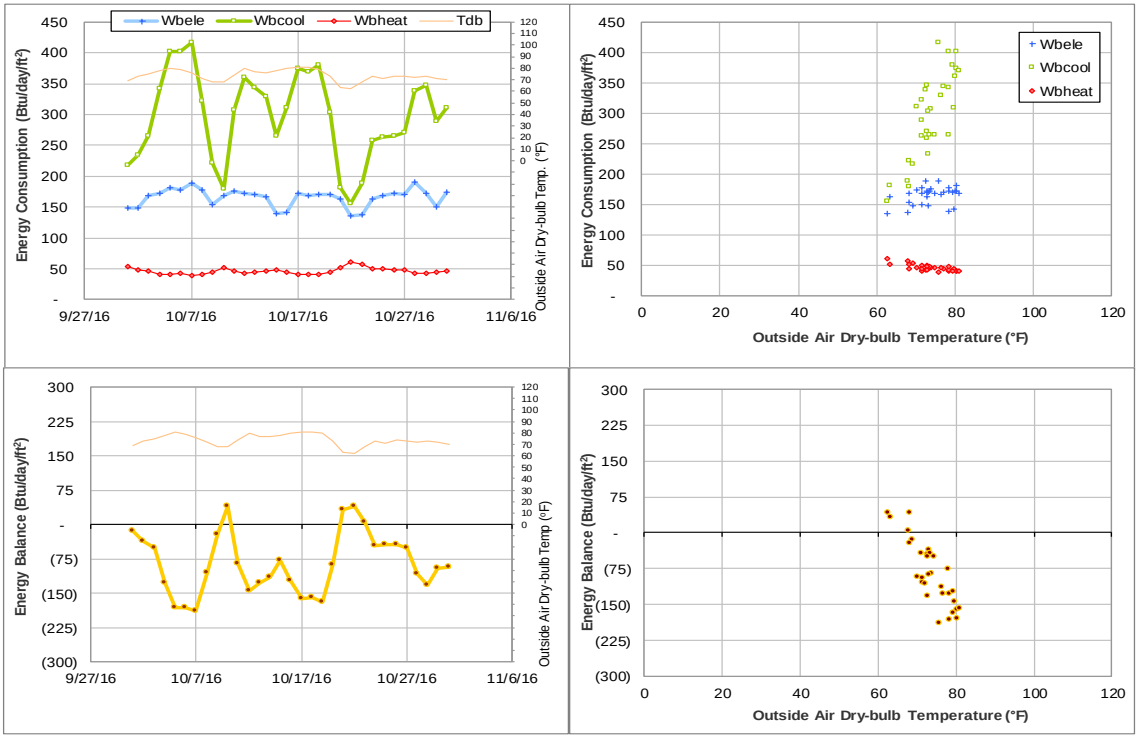


Figure IV-73 MSC TAMU BLDG # 454 Energy Balance Plot during October 2016

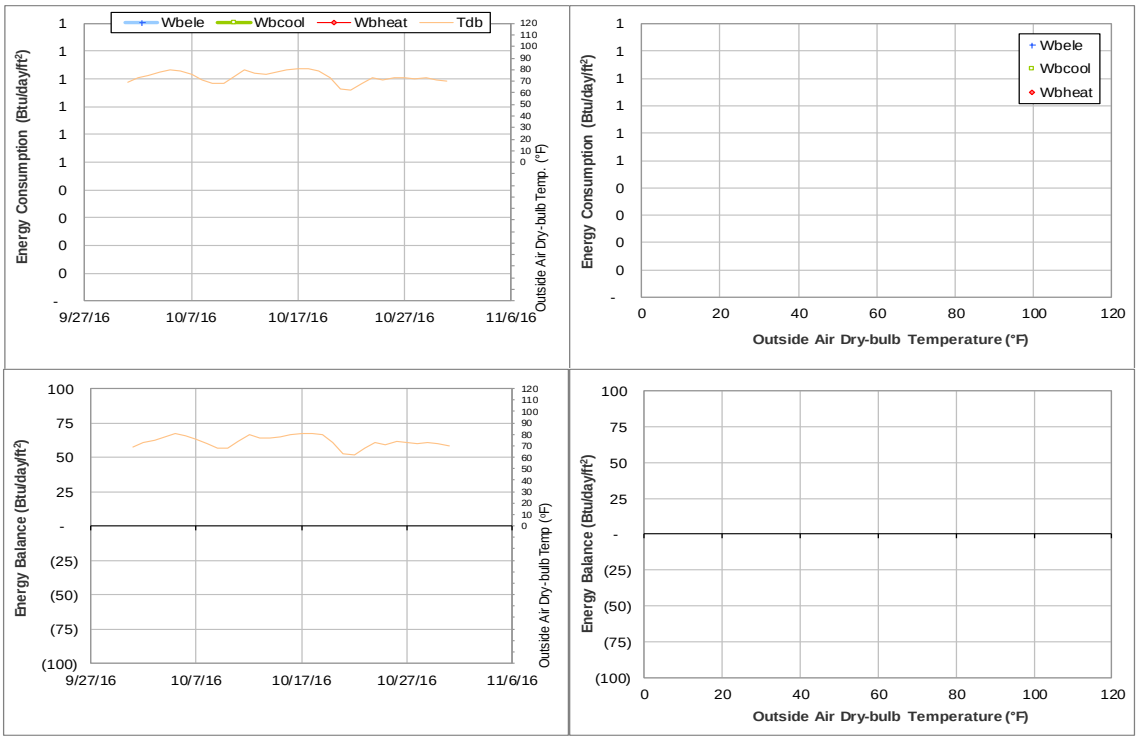


Figure IV-74 Military Sciences Building TAMU BLDG # 456 Energy Balance Plot during October 2016

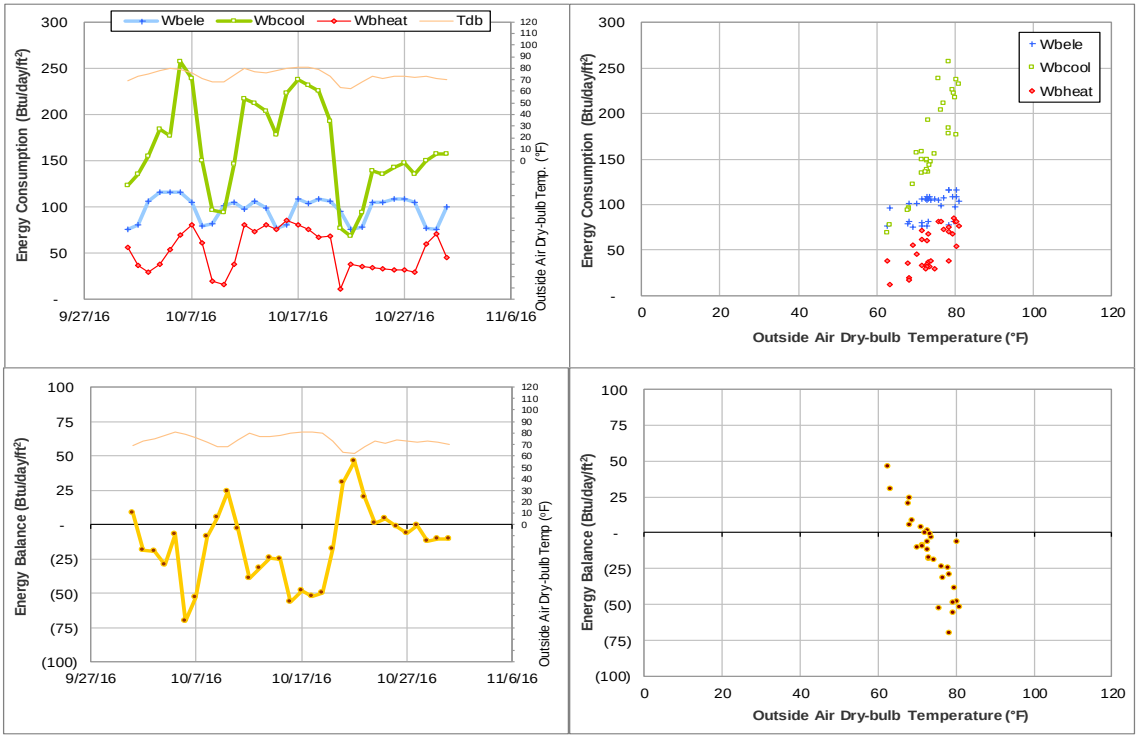


Figure IV-75 TAES Annex Building TAMU BLDG # 457 Energy Balance Plot during October 2016

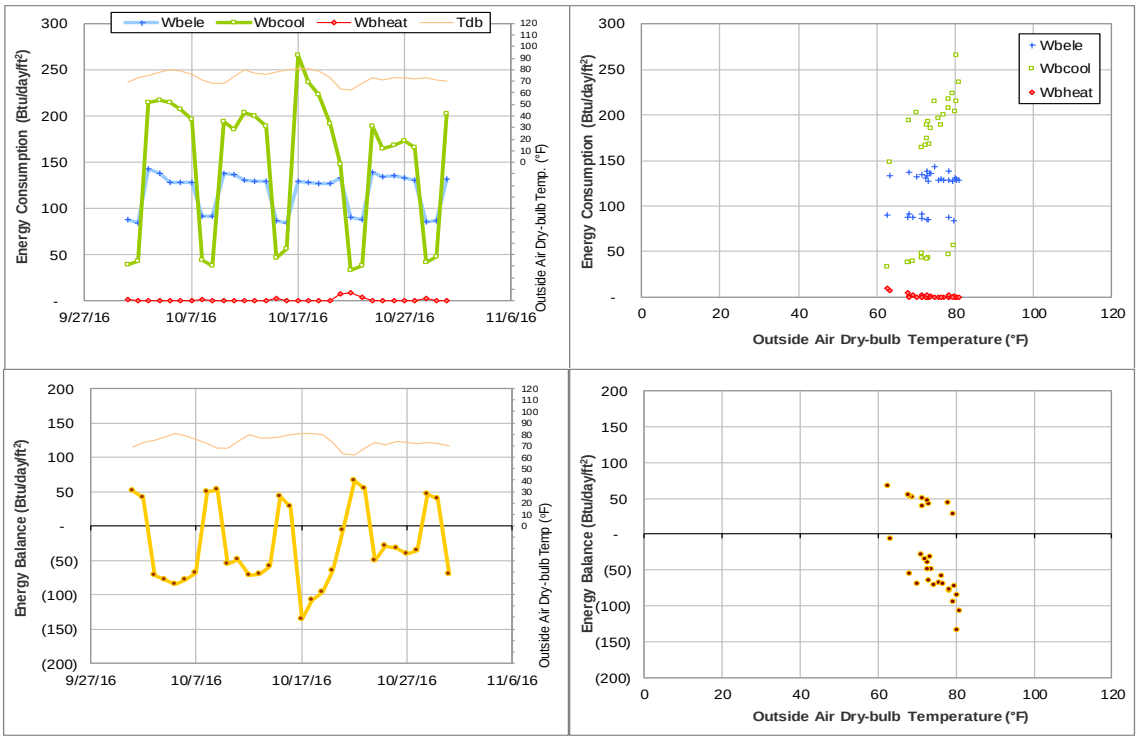


Figure IV-76 Coke Building TAMU BLDG # 461 Energy Balance Plot during October 2016

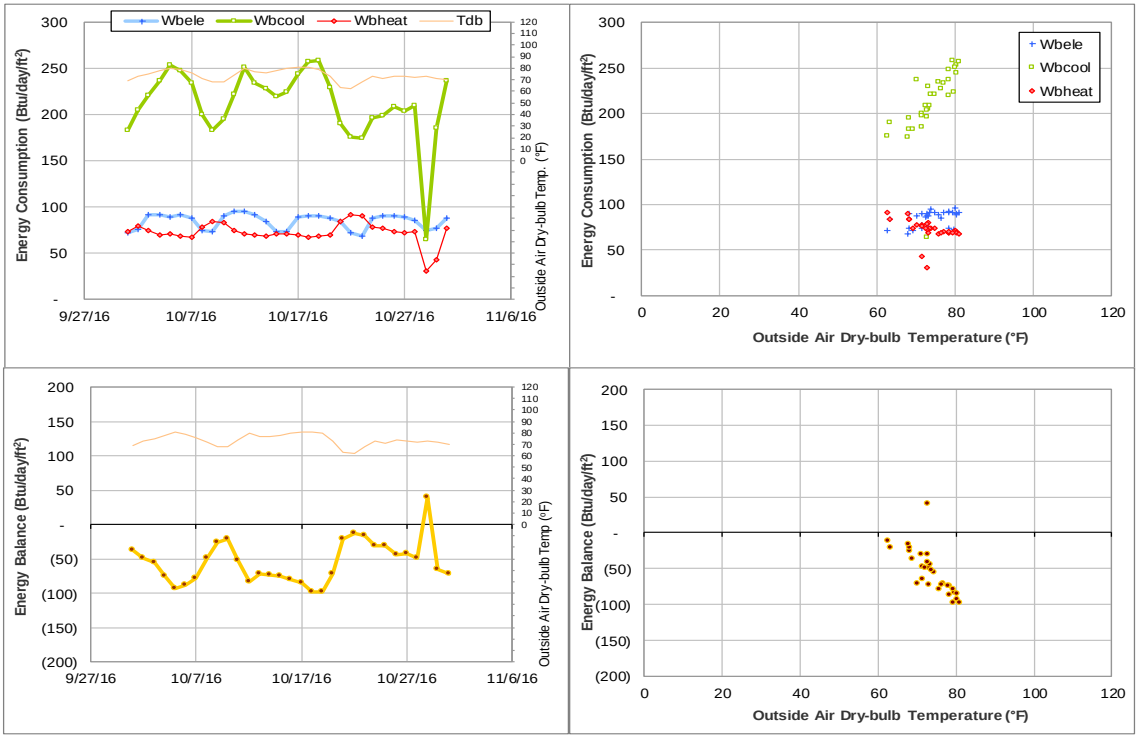


Figure IV-77 Academic Building TAMU BLDG # 462 Energy Balance Plot during October 2016

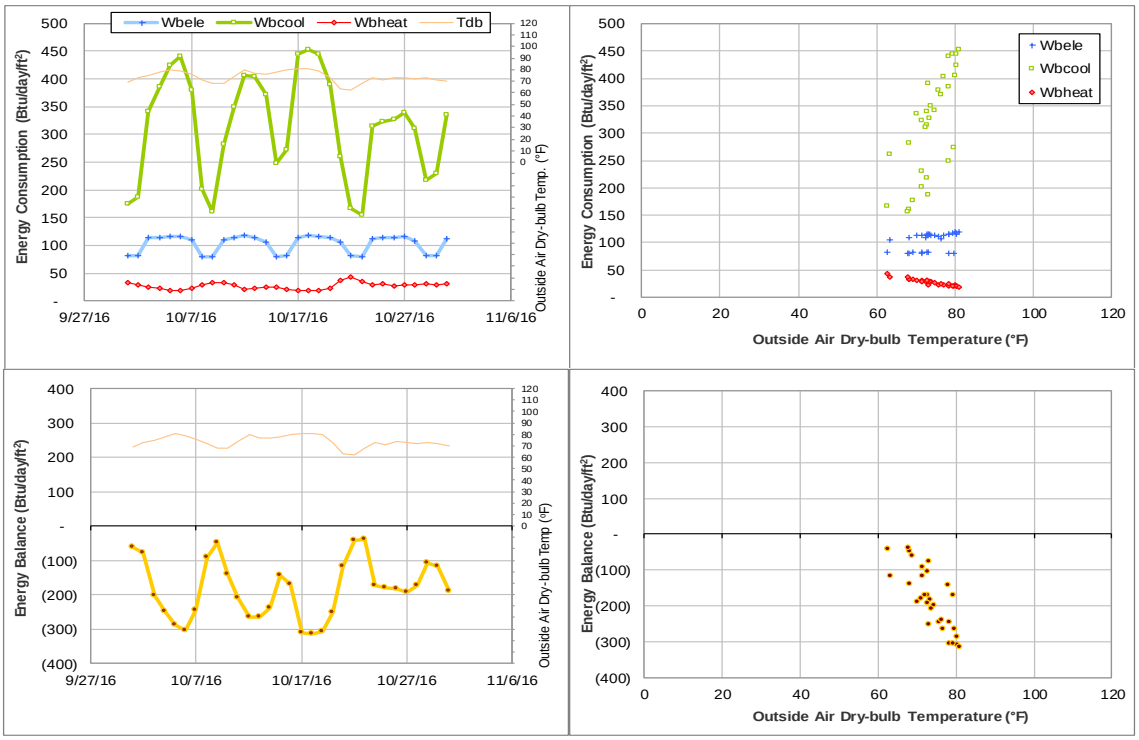


Figure IV-78 Psychology Building TAMU BLDG # 463 Energy Balance Plot during October 2016

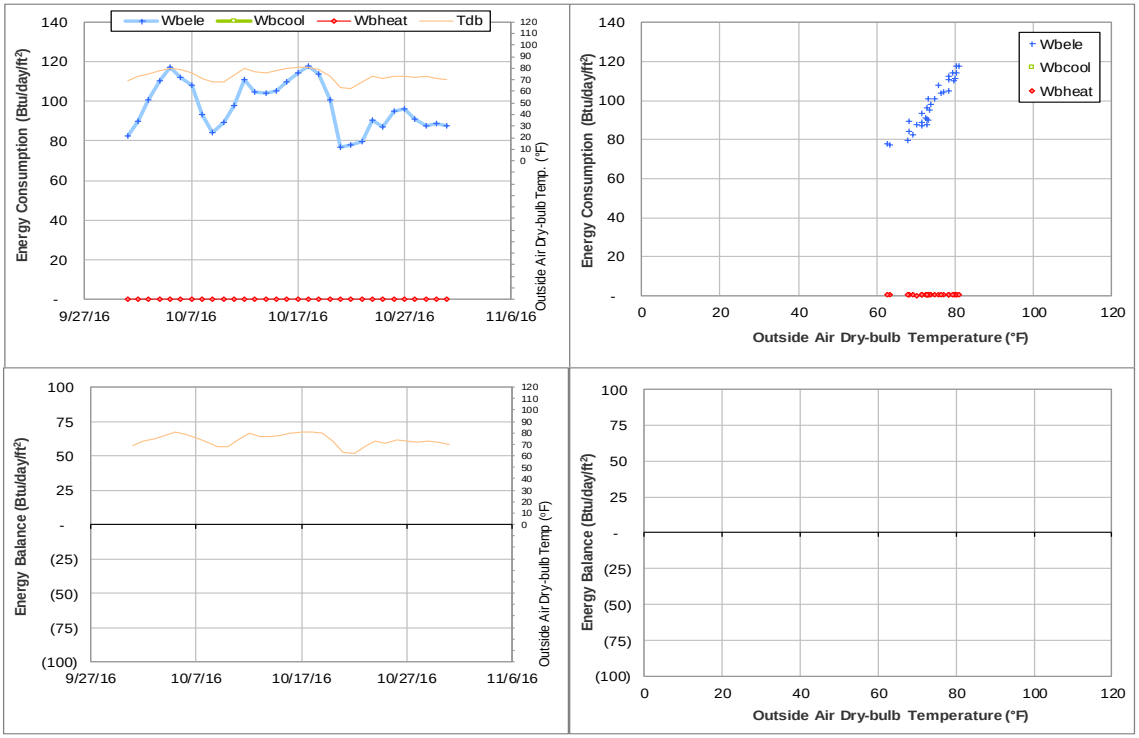


Figure IV-79 State Chemist Building TAMU BLDG # 464 Energy Balance Plot during October 2016

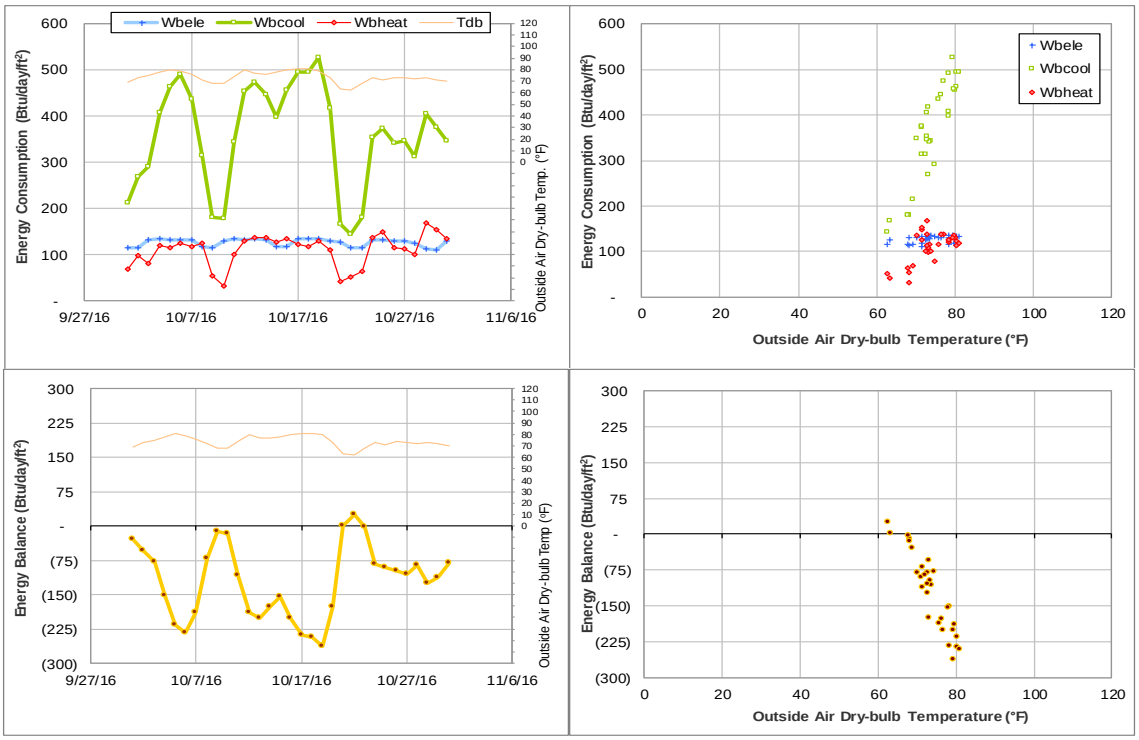


Figure IV-80 Butler Hall TAMU BLDG # 465 Energy Balance Plot during October 2016

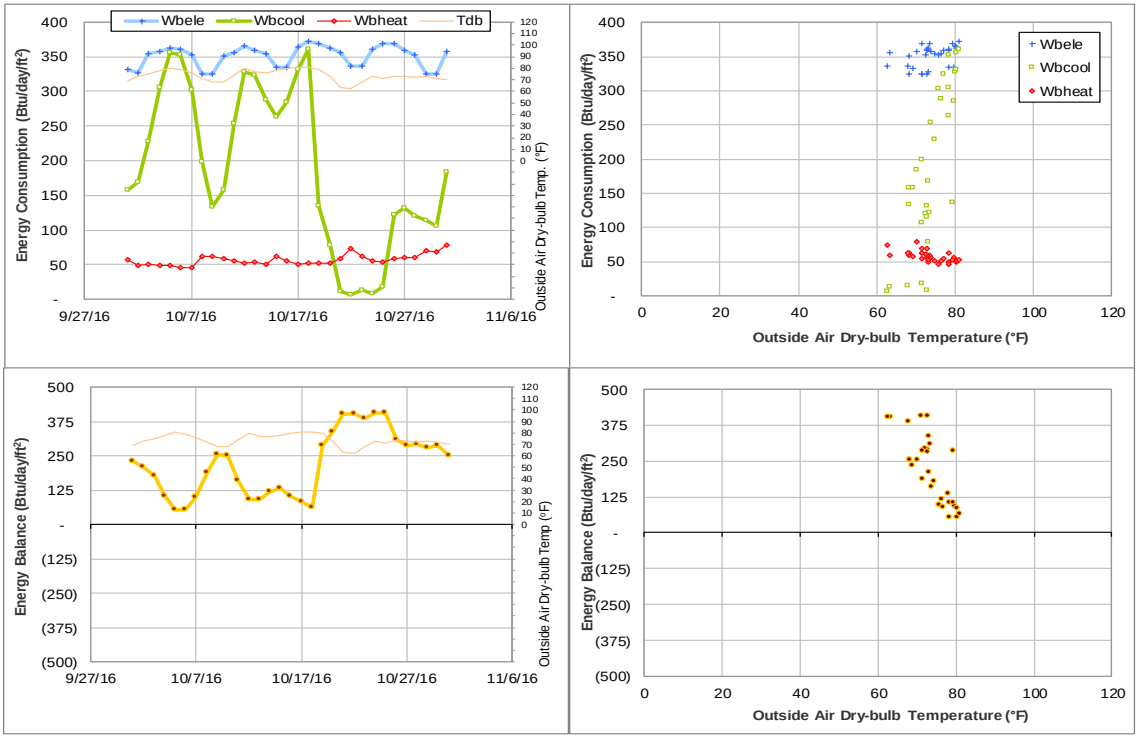


Figure IV-81 Biological Sciences Building - East TAMU BLDG # 467 Energy Balance Plot during October 2016

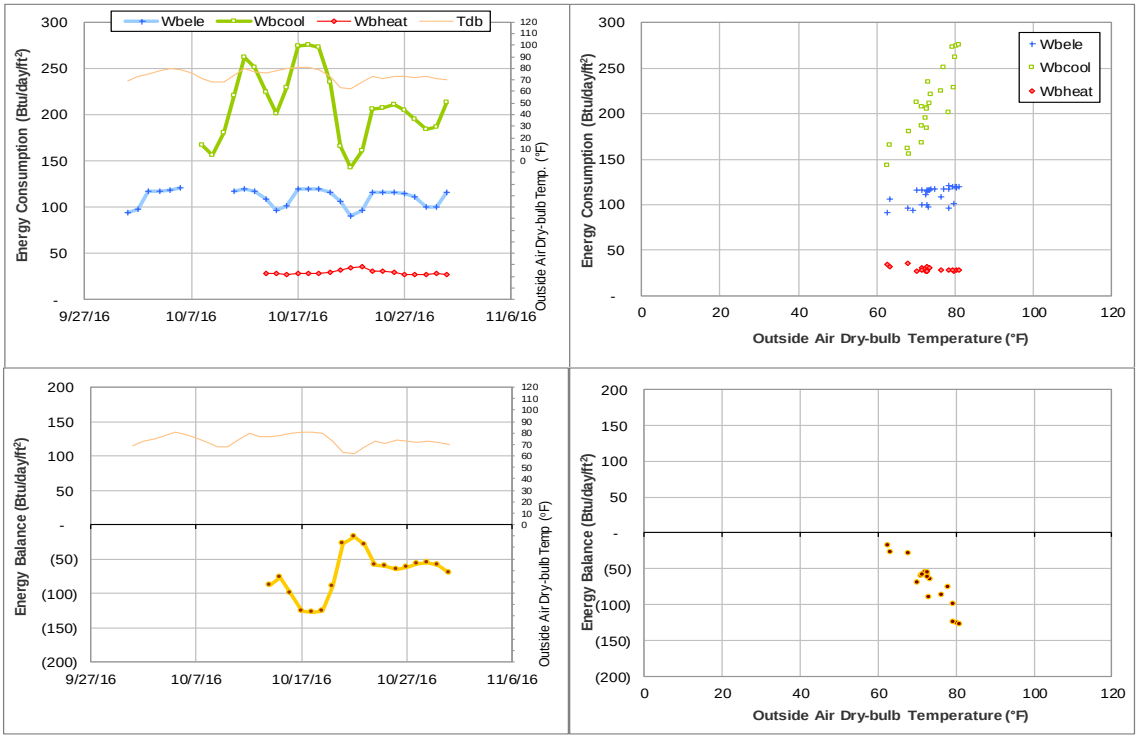


Figure IV-82 Evans Library TAMU BLDG # 468 Energy Balance Plot during October 2016

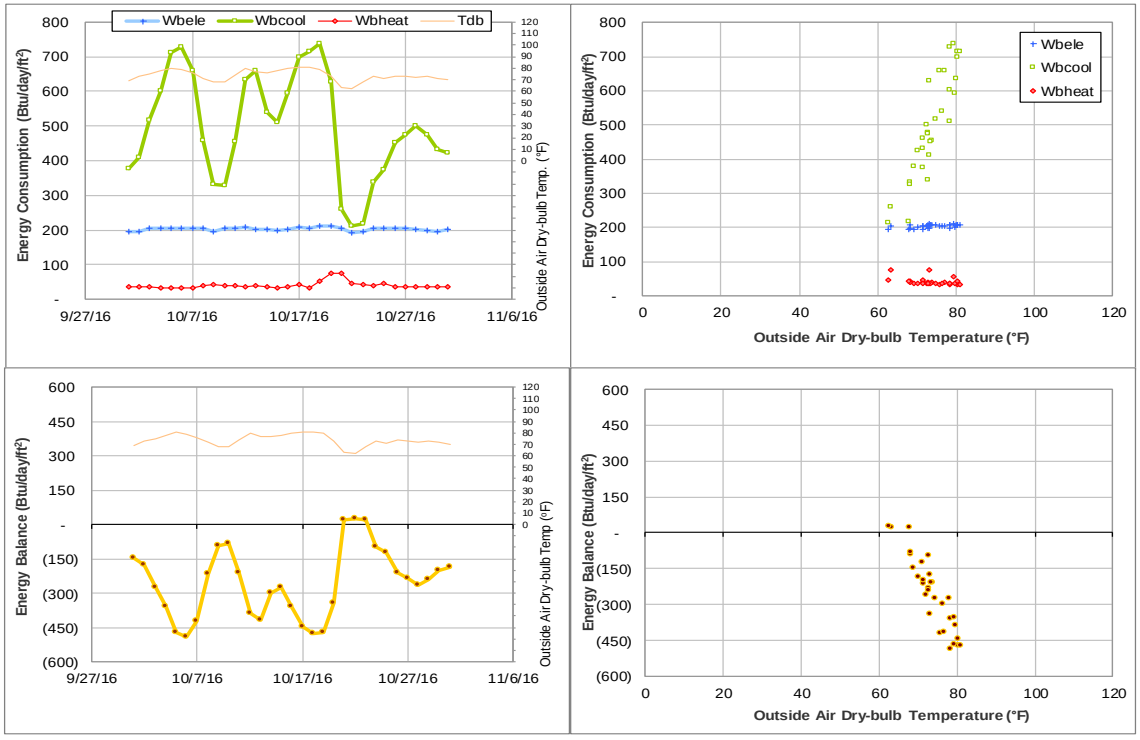


Figure IV-83 Central Campus Parking Garage TAMU BLDG # 469 Energy Balance Plot during October 2016

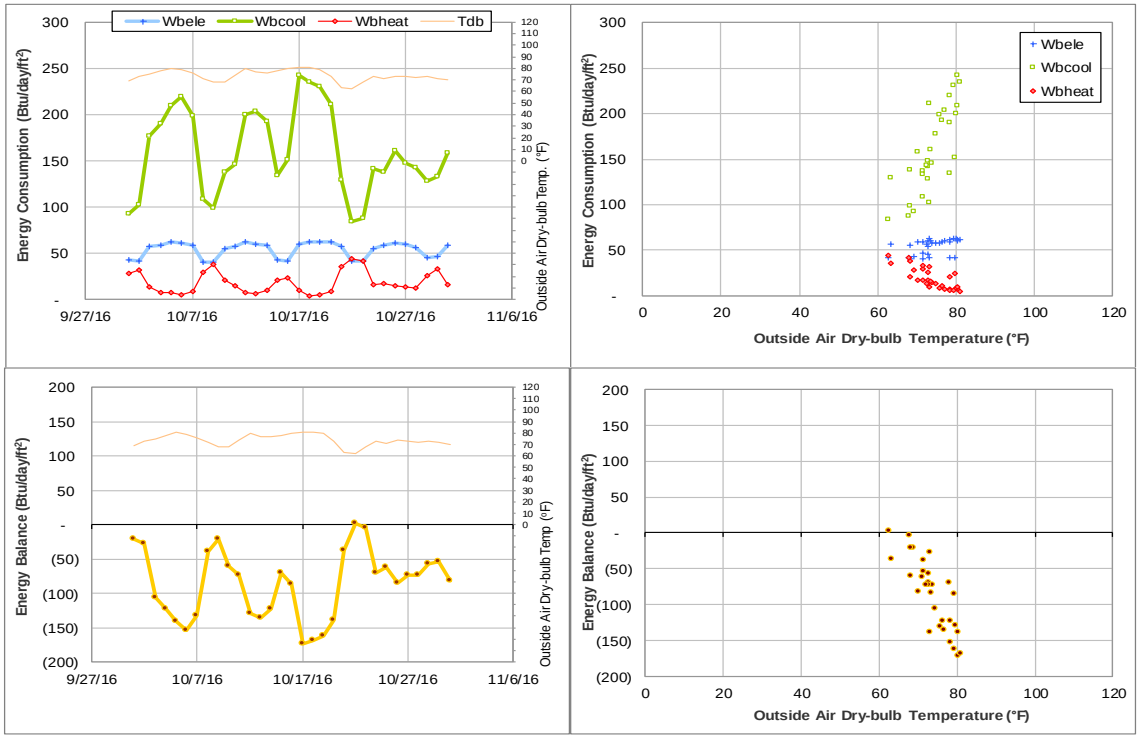


Figure IV-84 Glasscock History Bldg TAMU BLDG # 470 Energy Balance Plot during October 2016

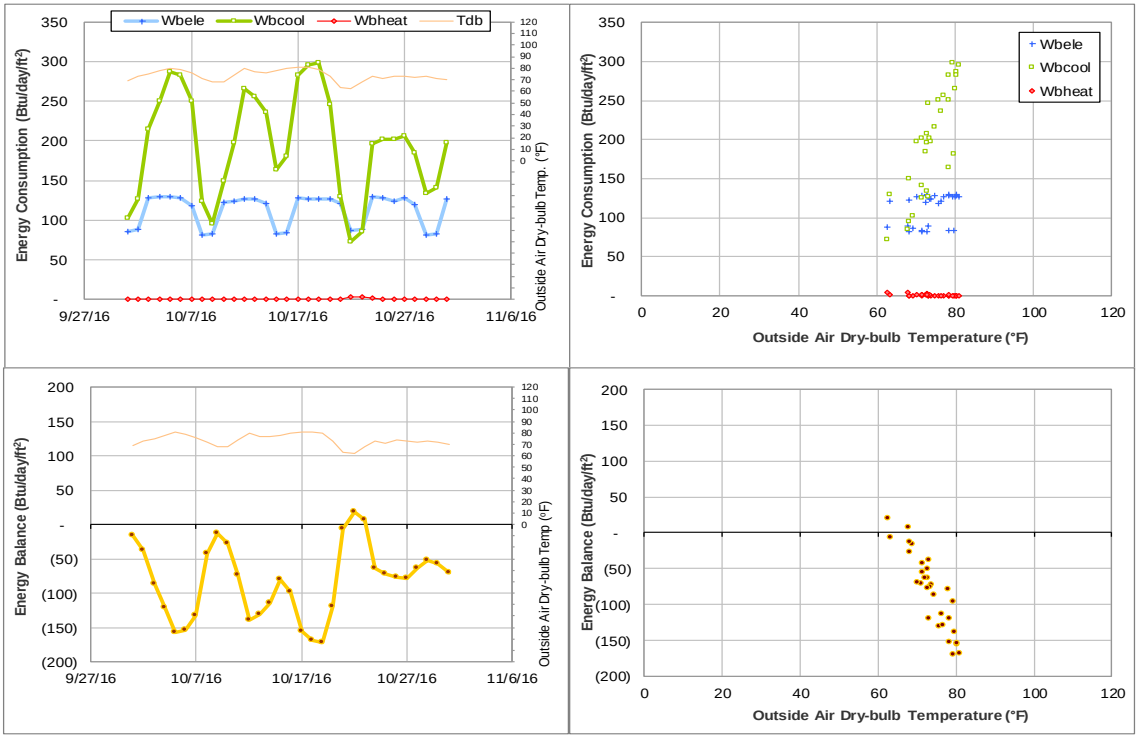


Figure IV-85 Pavilion TAMU BLDG # 471 Energy Balance Plot during October 2016

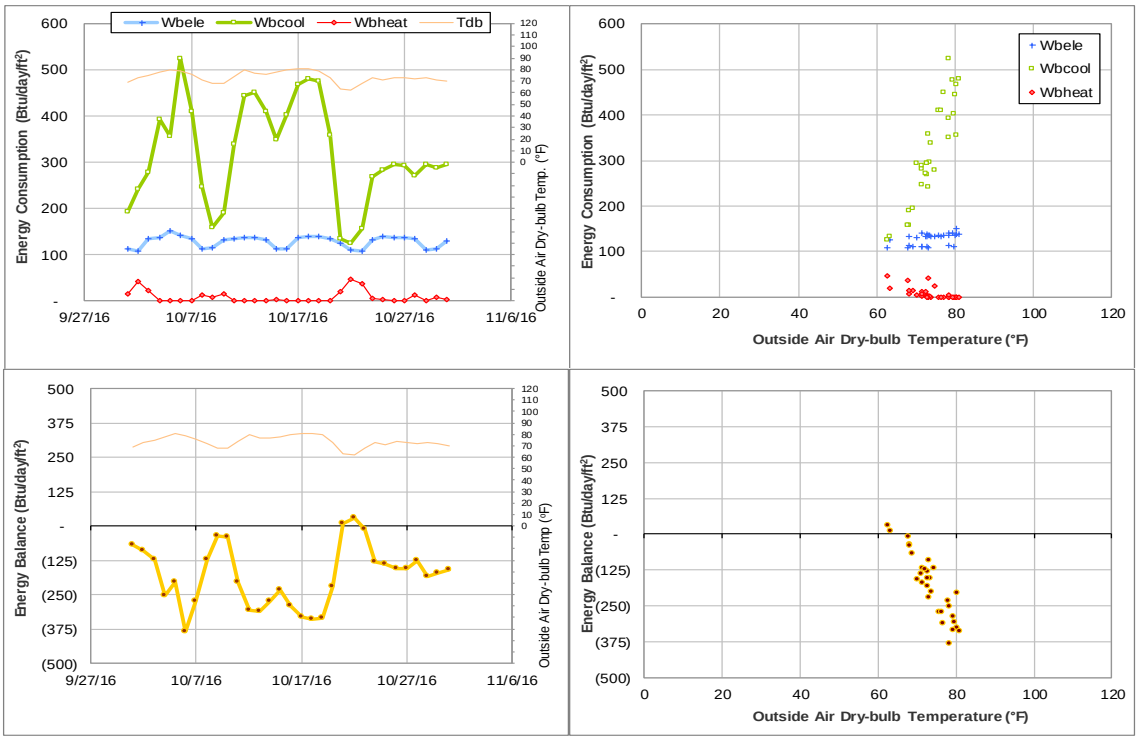


Figure IV-86 Animal Industries TAMU BLDG # 472 Energy Balance Plot during October 2016

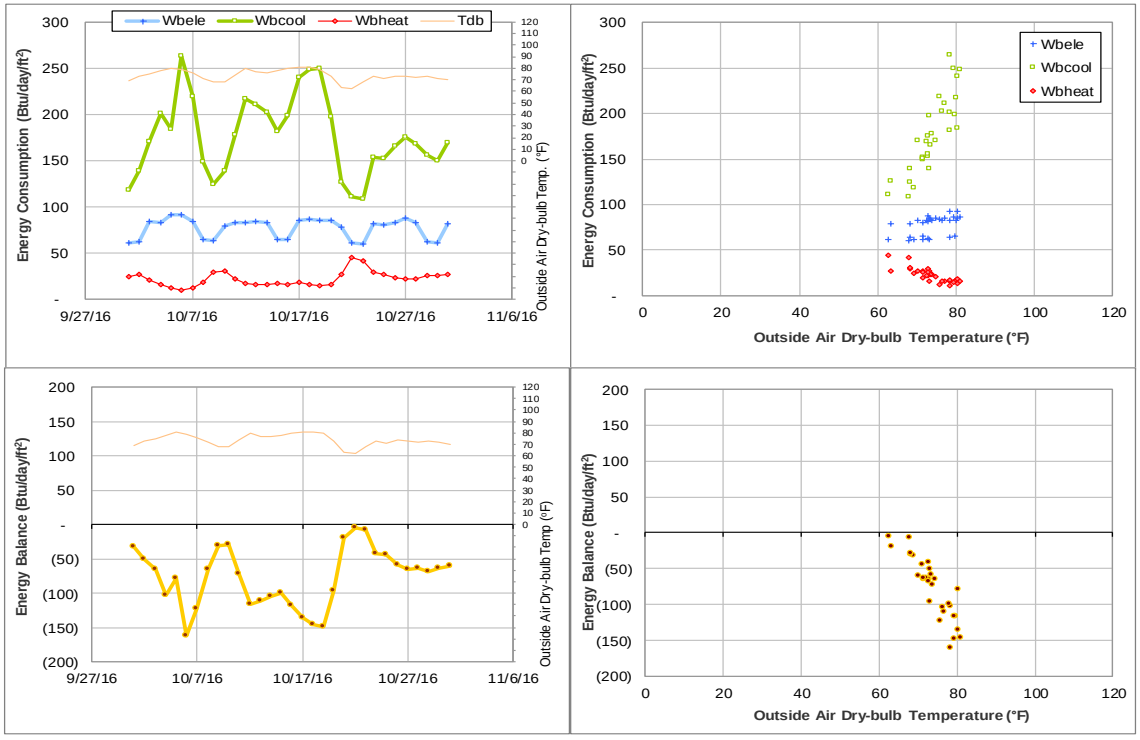


Figure IV-87 Williams Administration Building TAMU BLDG # 473 Energy Balance Plot during October 2016

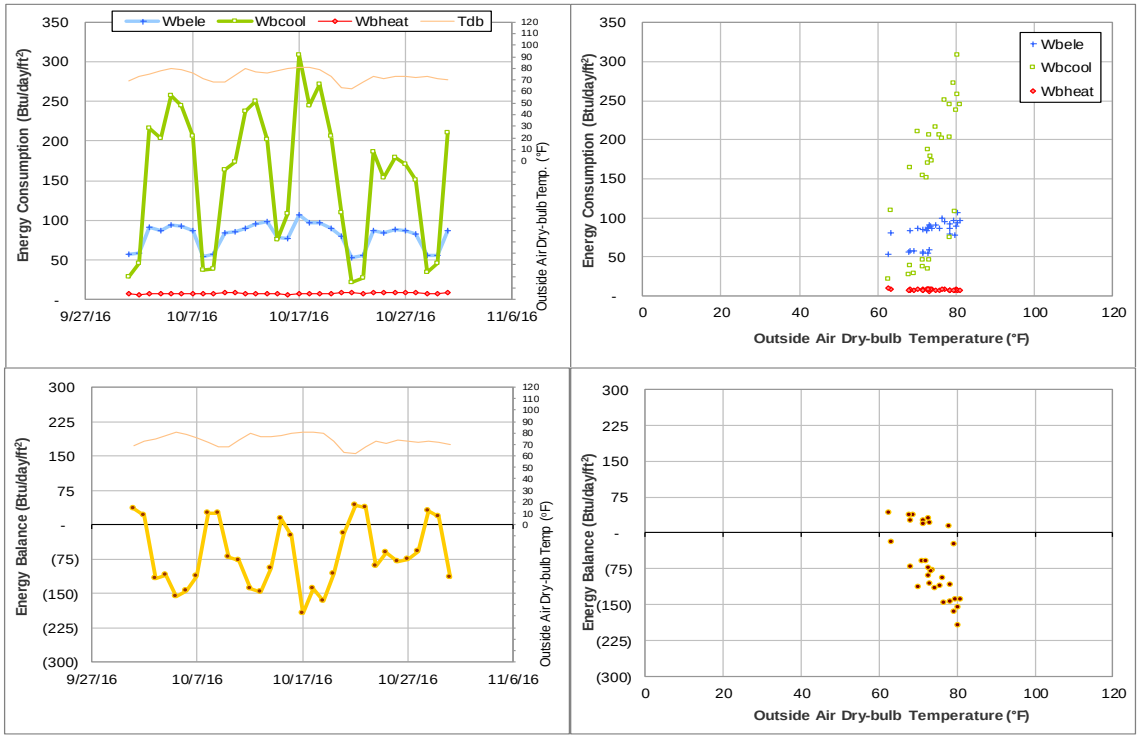


Figure IV-88 YMCA Building TAMU BLDG # 474 Energy Balance Plot during October 2016

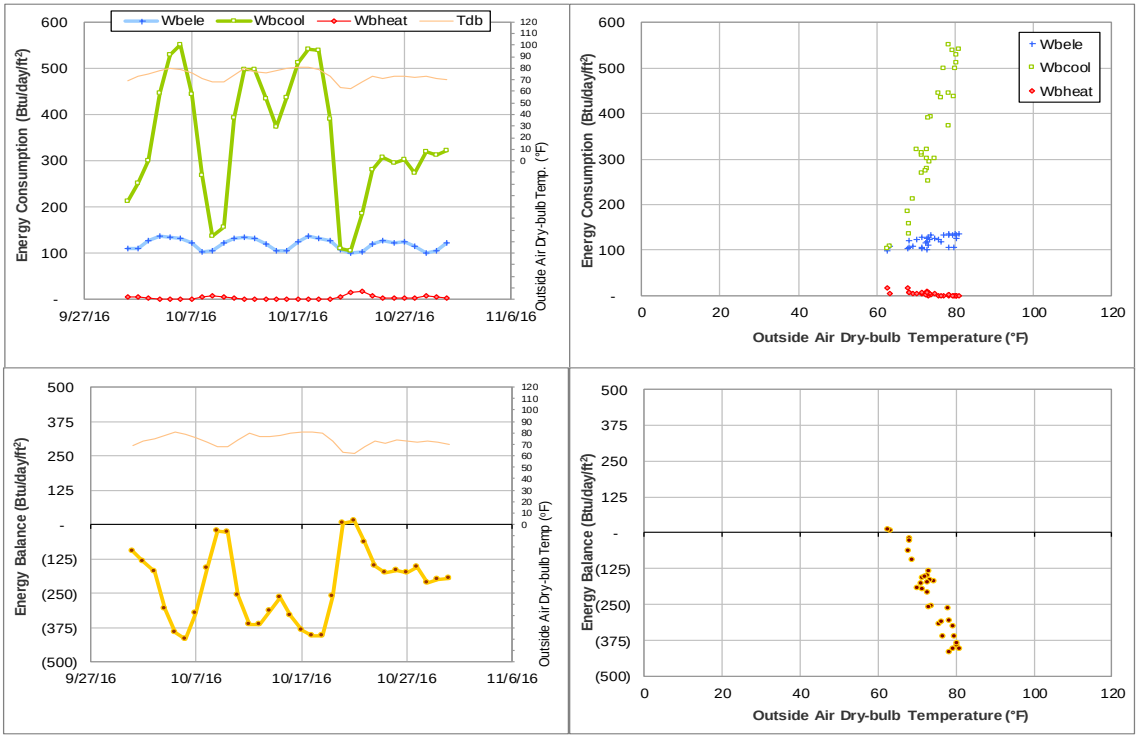


Figure IV-89 Francis Hall TAMU BLDG # 476 Energy Balance Plot during October 2016

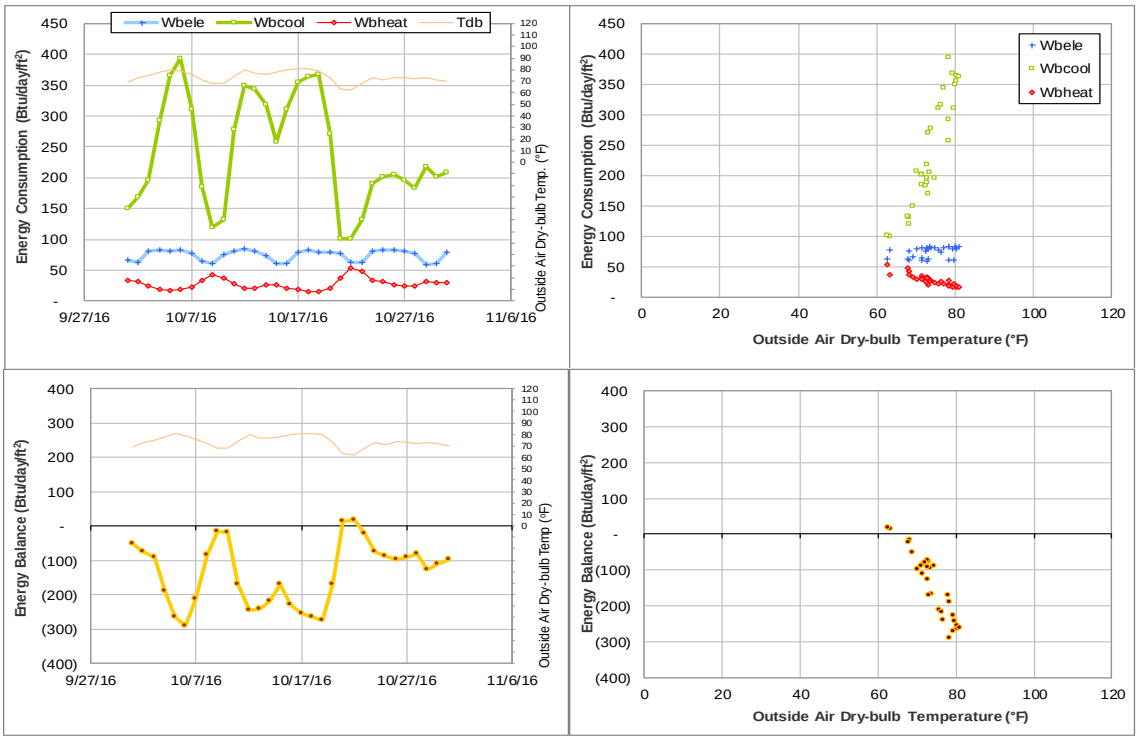


Figure IV-90 Anthropology Building TAMU BLDG # 477 Energy Balance Plot during October 2016

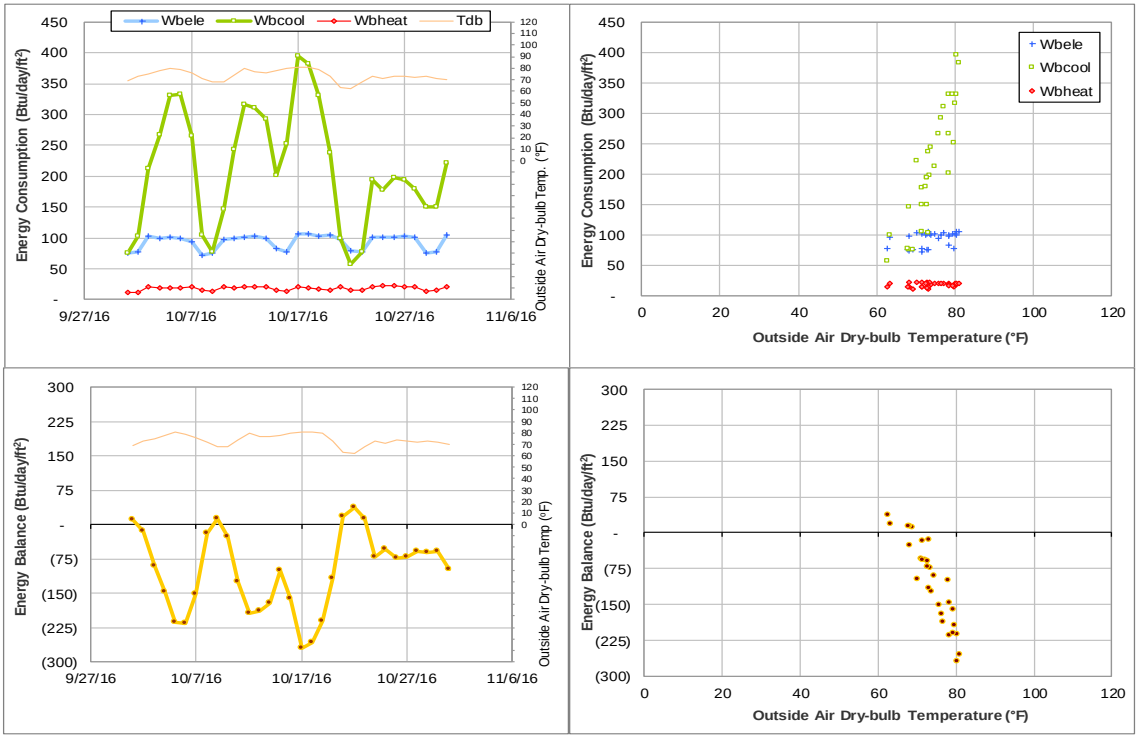


Figure IV-91 Scoates Hall TAMU BLDG # 478 Energy Balance Plot during October 2016

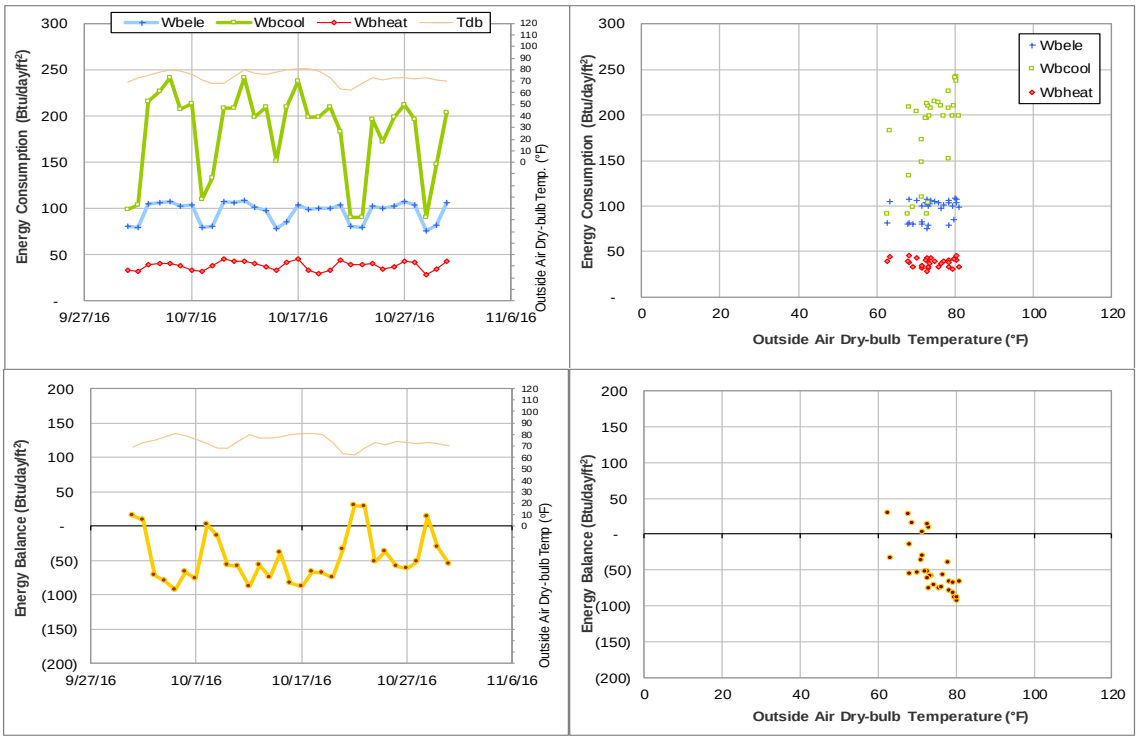


Figure IV-92 Bolton Hall TAMU BLDG # 480 Energy Balance Plot during October 2016

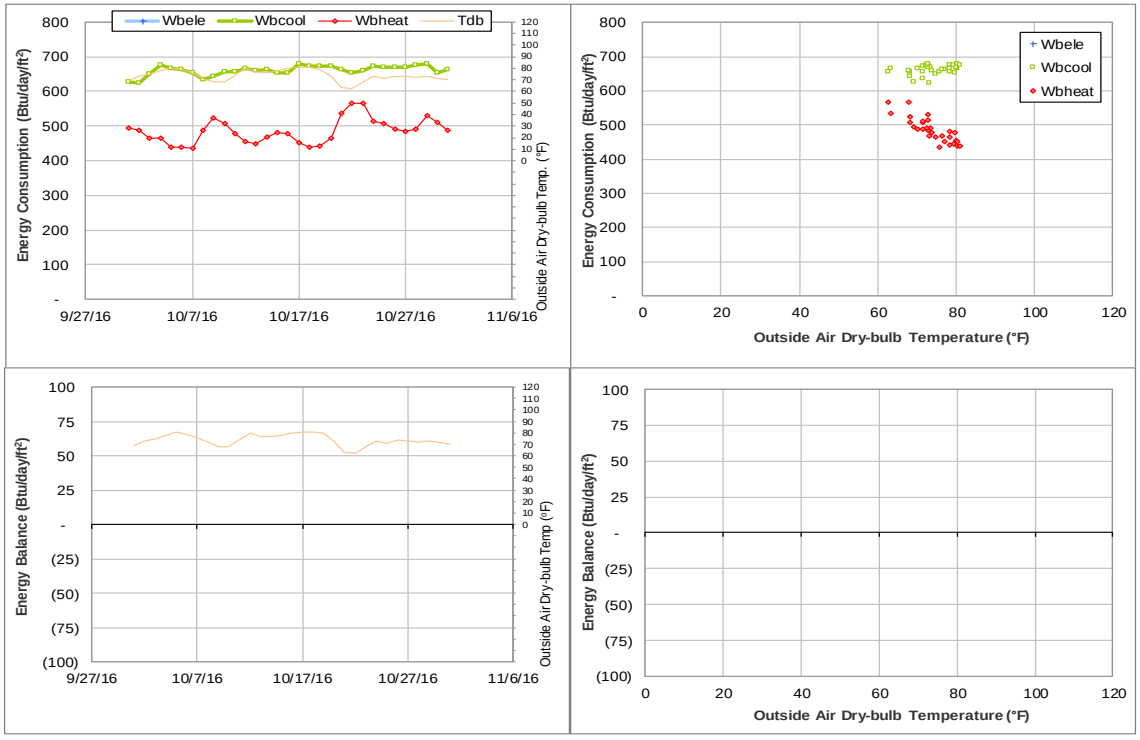


Figure IV-93 Heaton Hall TAMU BLDG # 481 Energy Balance Plot during October 2016

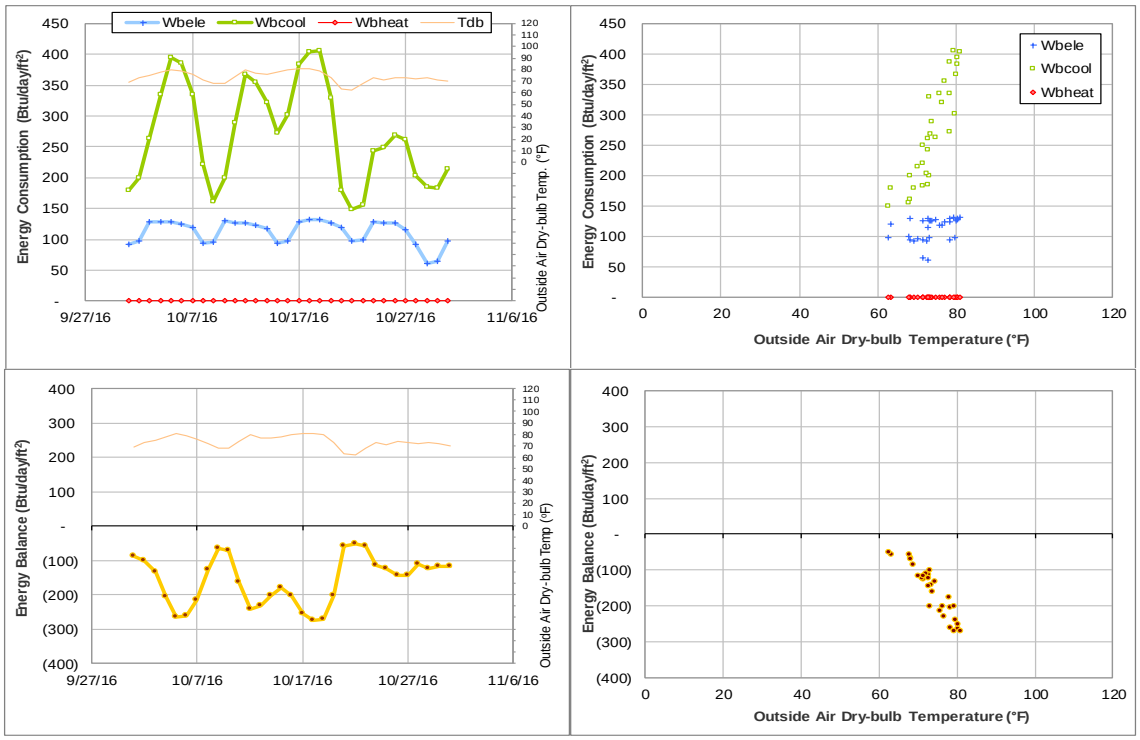


Figure IV-94 Fermier Hall TAMU BLDG # 482 Energy Balance Plot during October 2016

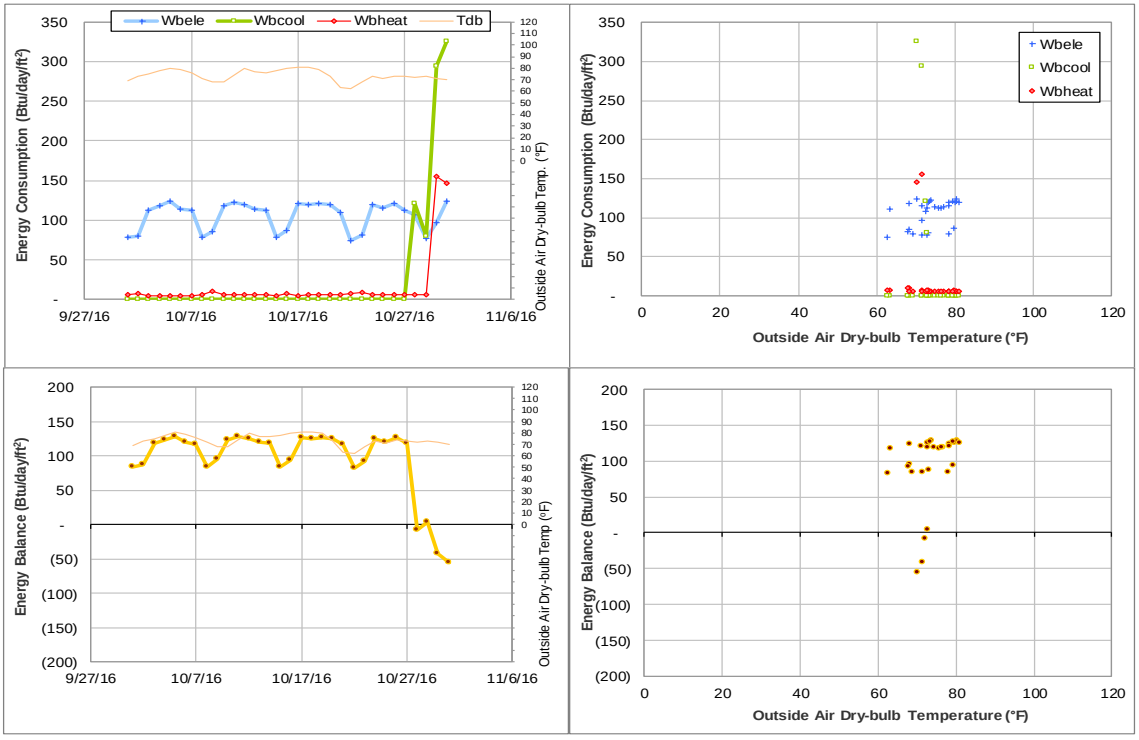


Figure IV-95 Thompson Hall TAMU BLDG # 483 Energy Balance Plot during October 2016

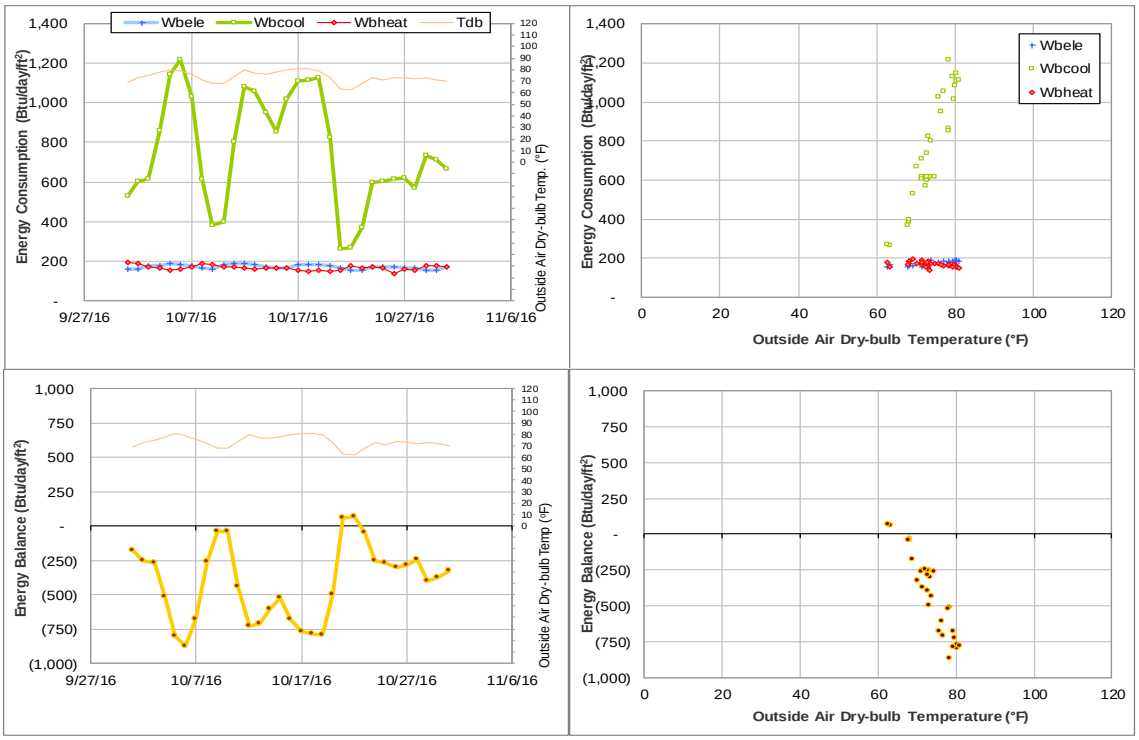


Figure IV-96 Chemistry Building TAMU BLDG # 484 Energy Balance Plot during October 2016

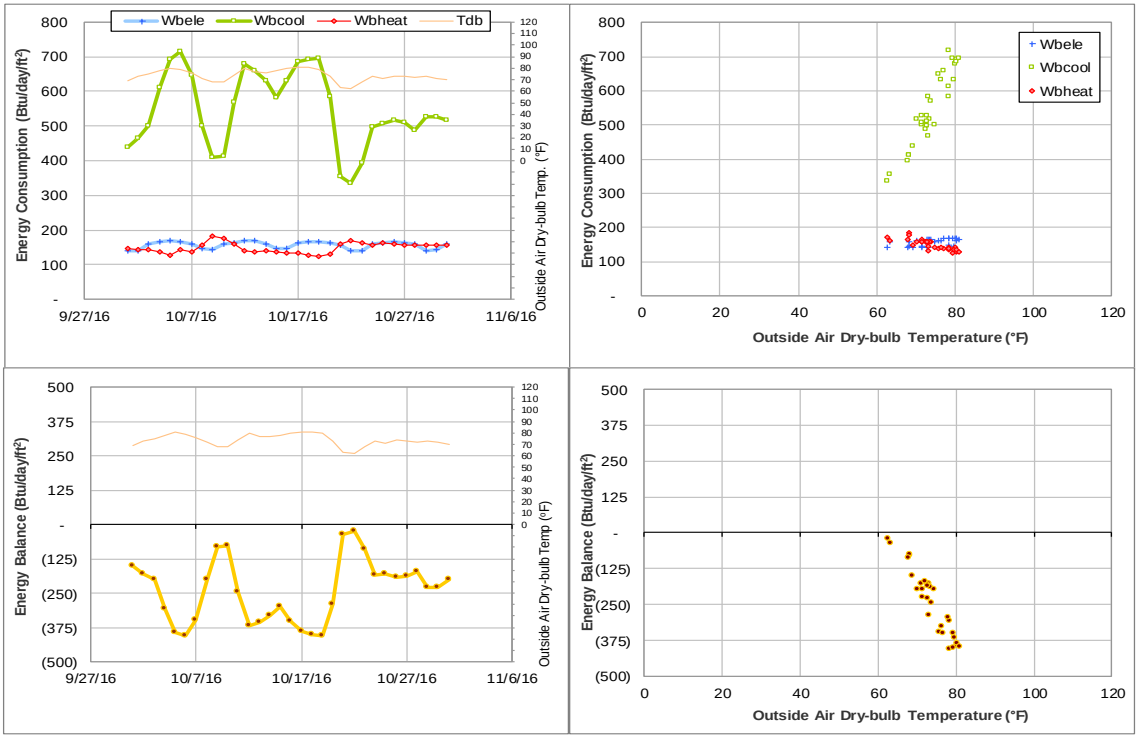


Figure IV-97 Halbouty Geosciences Building TAMU BLDG # 490 Energy Balance Plot during October 2016

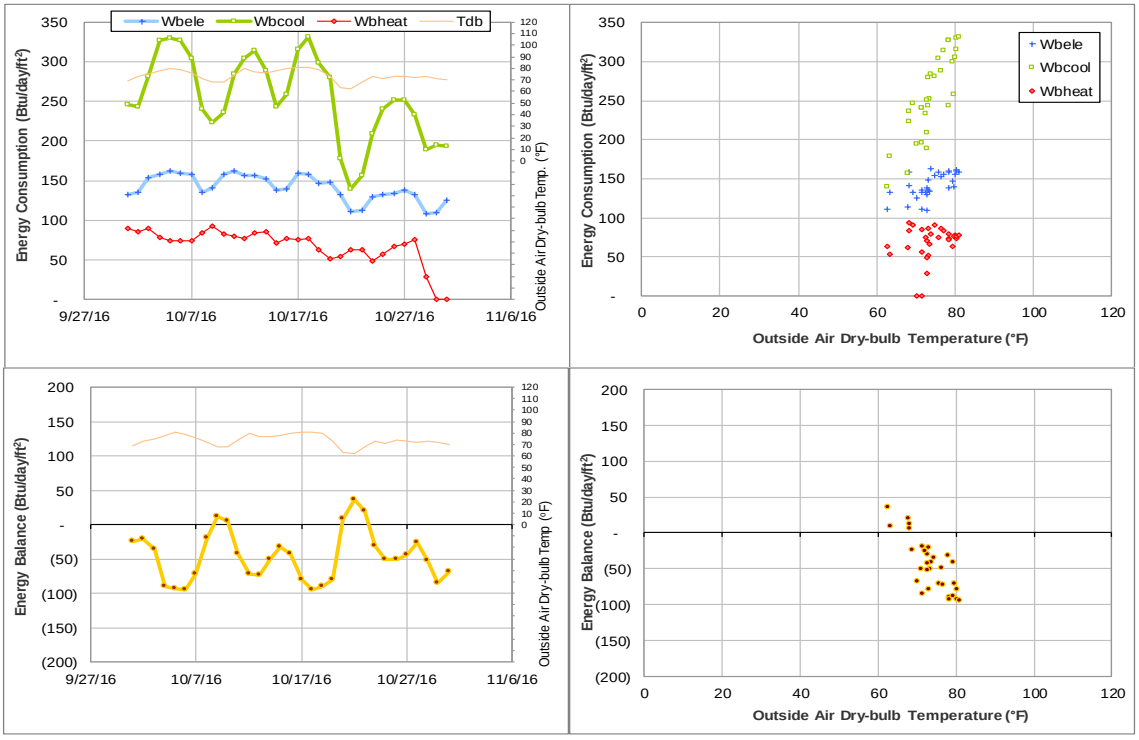


Figure IV-98 Civil Engineering Building TAMU BLDG # 492 Energy Balance Plot during October 2016

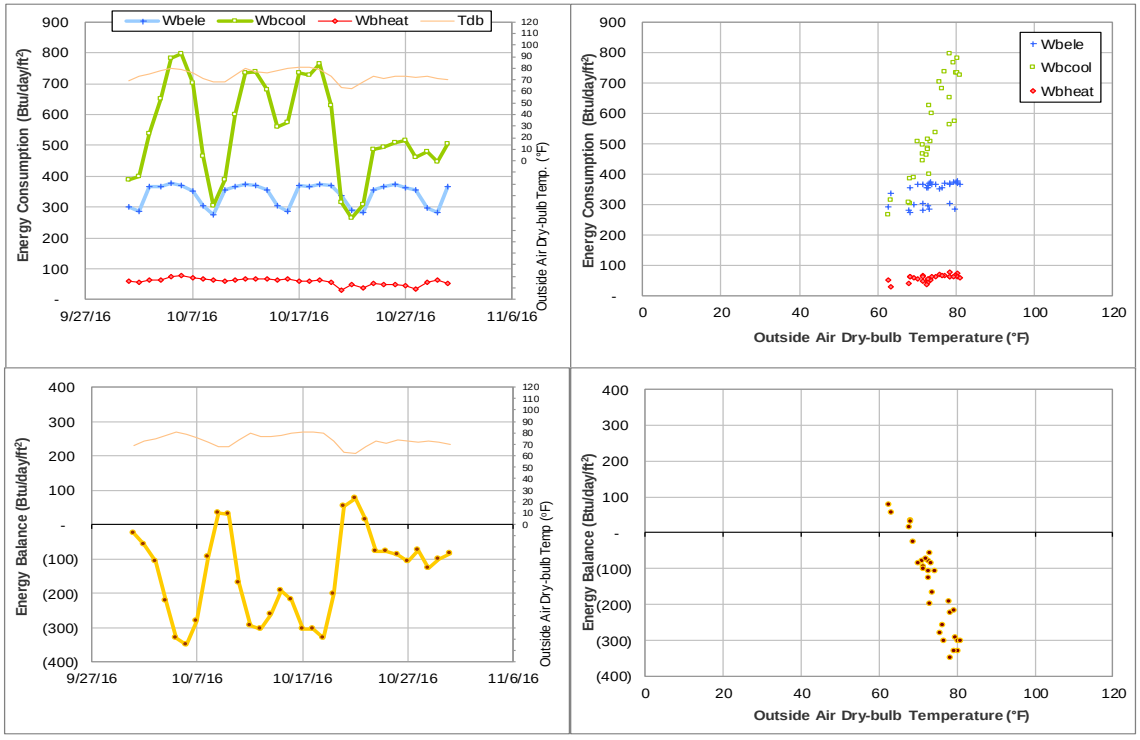


Figure IV-99 Sbisa Dining Hall TAMU BLDG # 495 Energy Balance Plot during October 2016

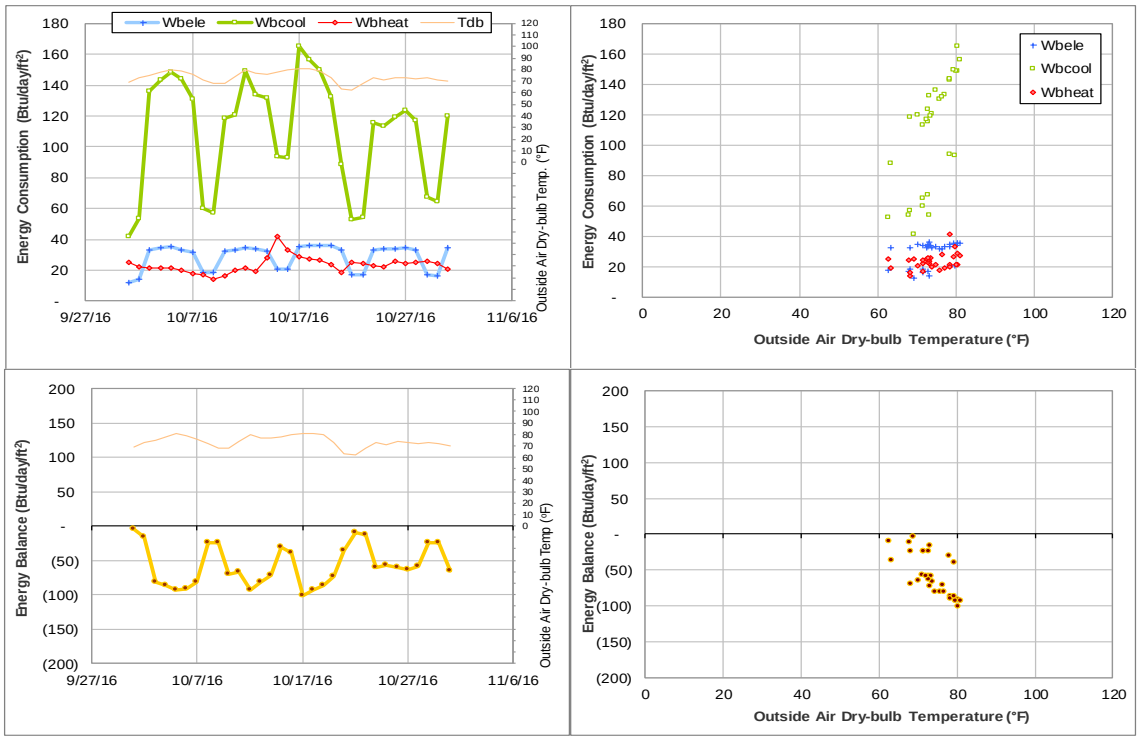


Figure IV-100 Utilities & Energy Services Central Office TAMU BLDG # 496 Energy Balance Plot during October 2016

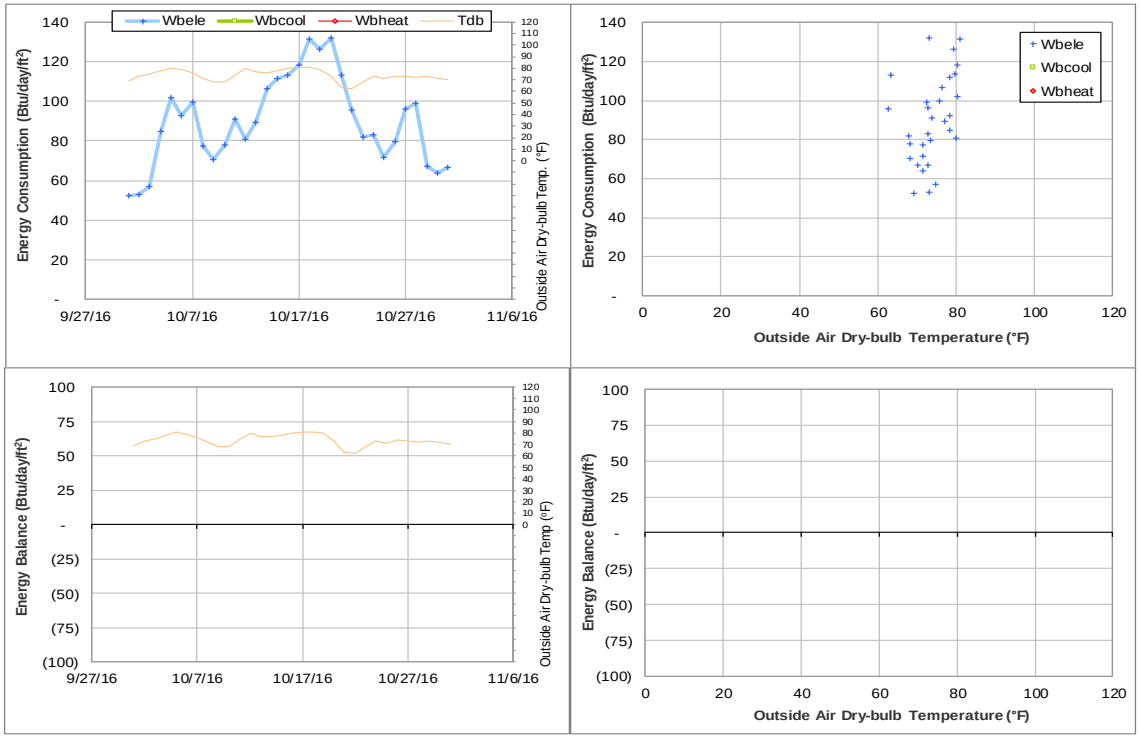


Figure IV-101 Concrete Materials Laboratory TAMU BLDG # 501 Energy Balance Plot during October 2016

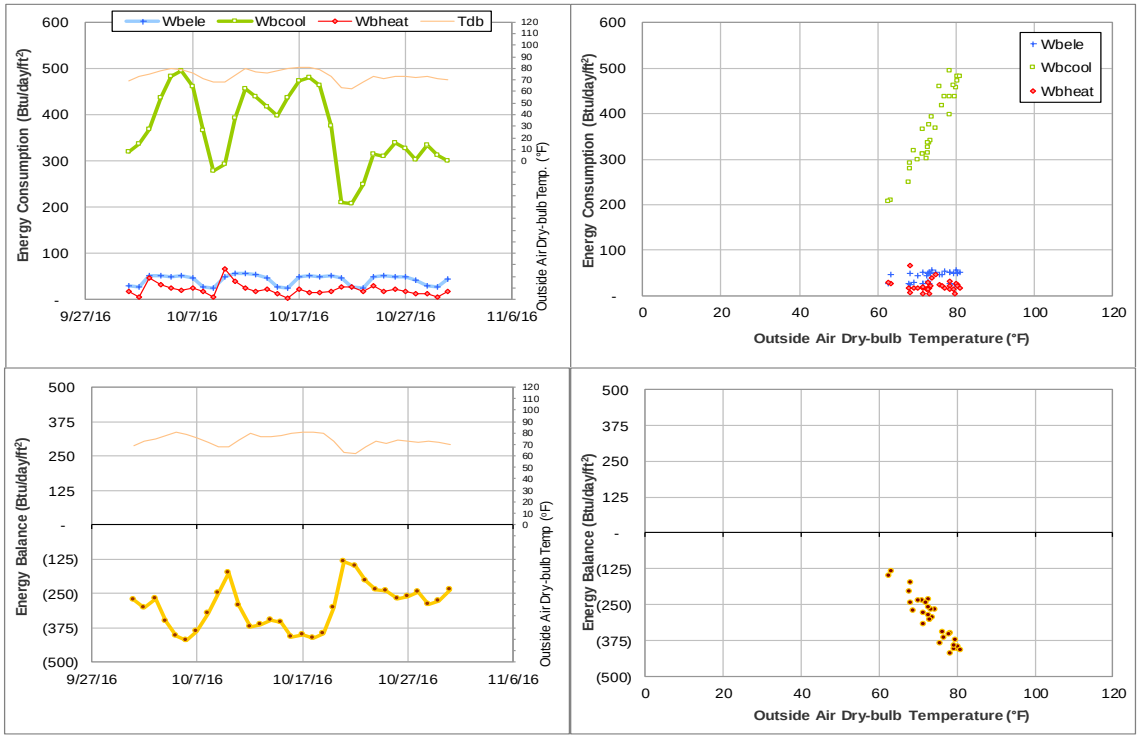


Figure IV-102 Nagle Hall TAMU BLDG # 506 Energy Balance Plot during October 2016

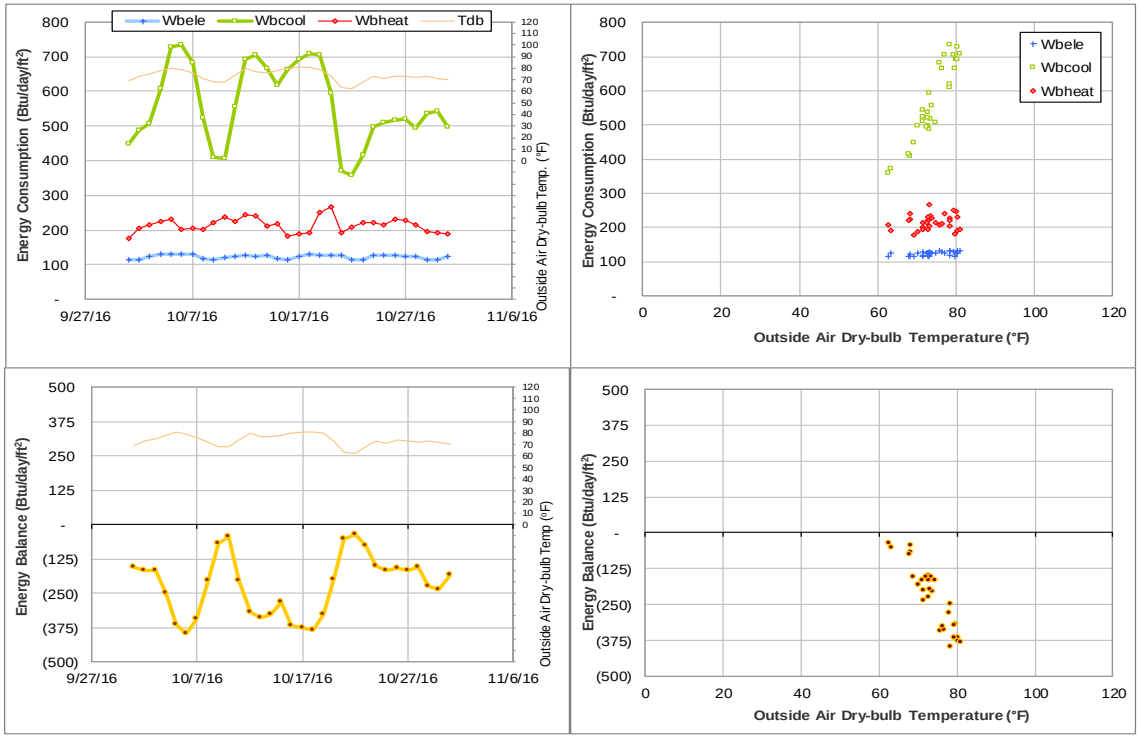


Figure IV-103 Veterinary Medical Science Building TAMU BLDG # 507 Energy Balance Plot during October 2016

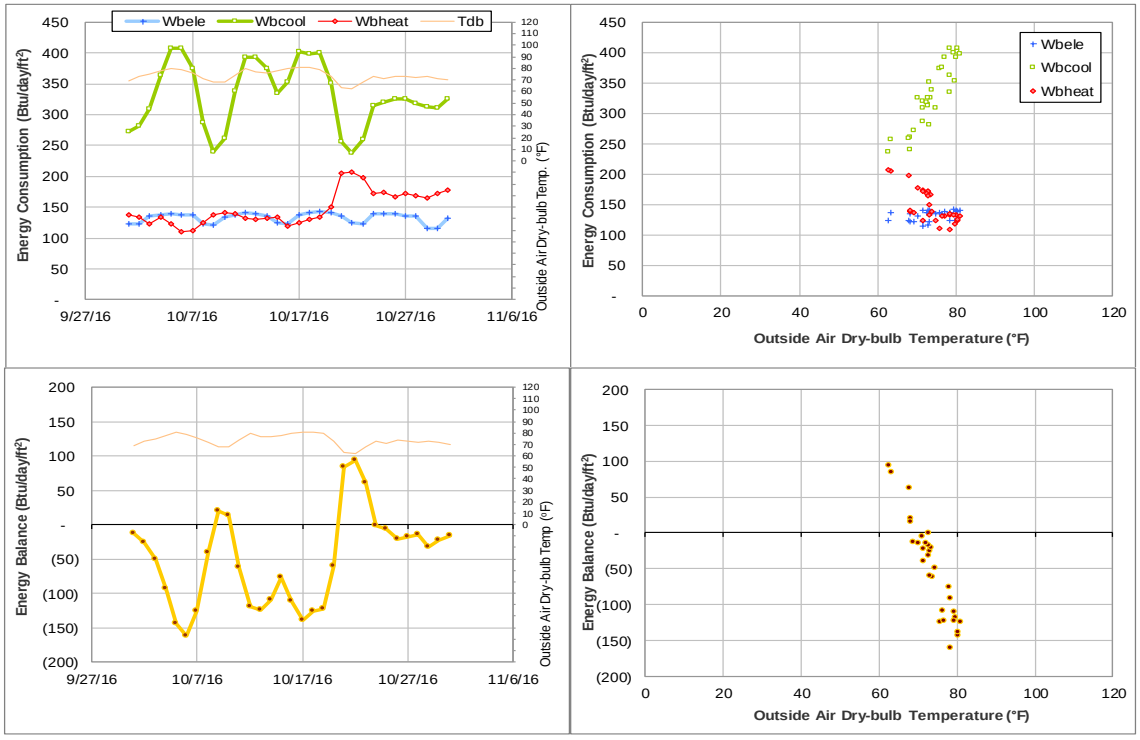


Figure IV-104 Veterinary Teaching Hospital and Med Adm TAMU BLDG # 508, #1026 Energy Balance Plot during October 2016

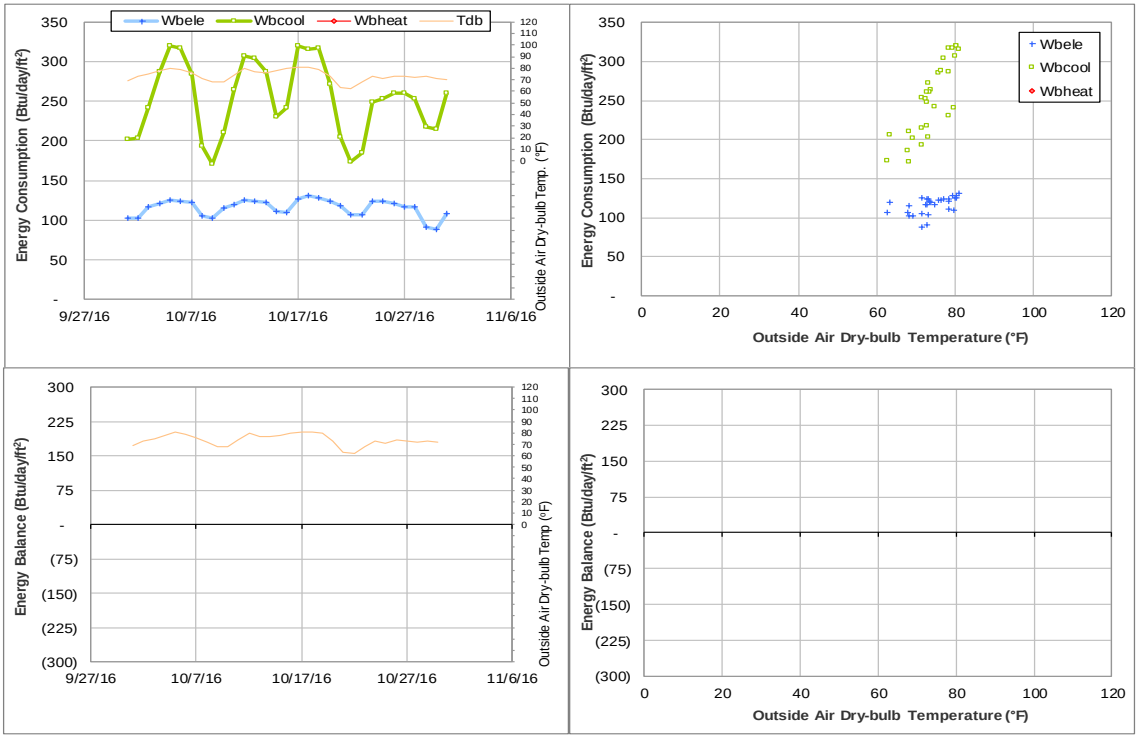


Figure IV-105 Veterinary Teaching Hospital TAMU BLDG # 508 Energy Balance Plot during October 2016

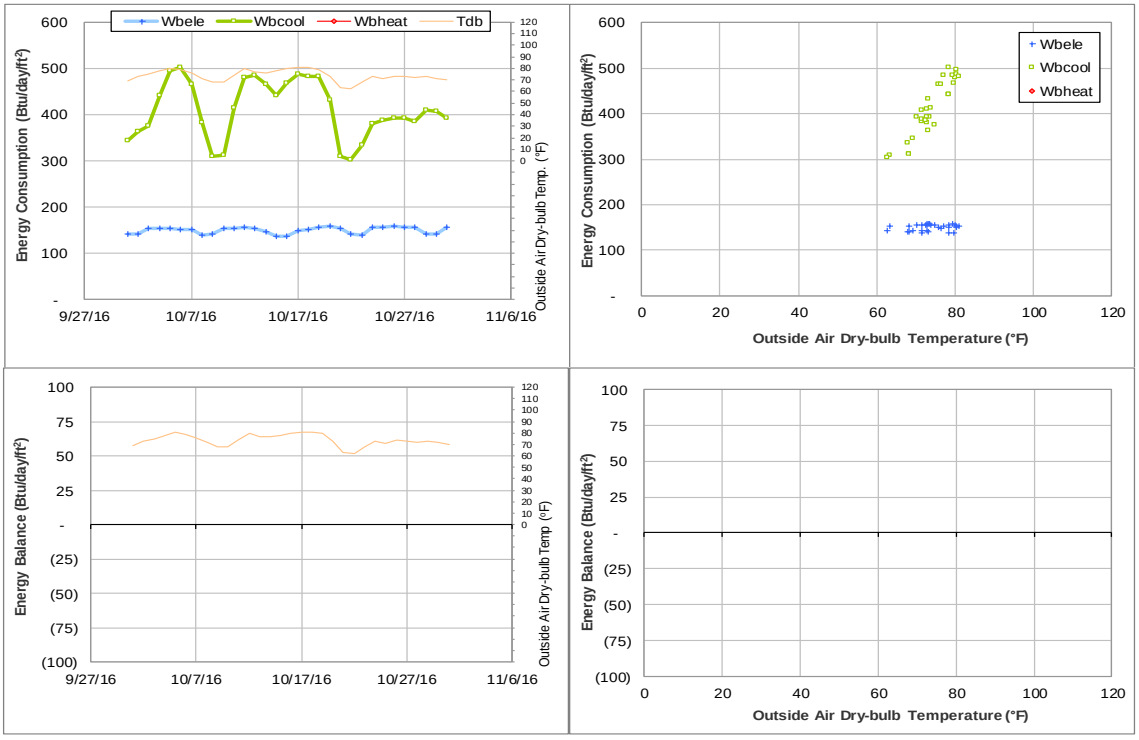


Figure IV-106 Veterinary Medicine Administration TAMU BLDG # 1026 Energy Balance Plot during October 2016

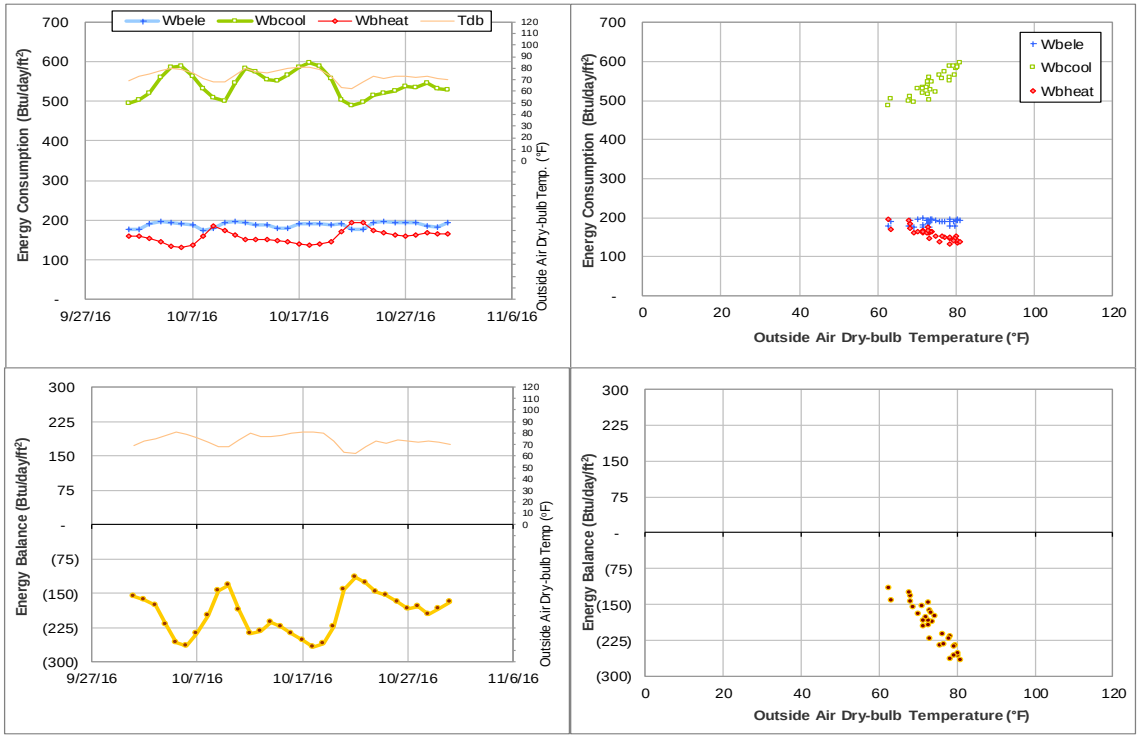


Figure IV-107 Heep Laboratory Building TAMU BLDG # 511 Energy Balance Plot during October 2016

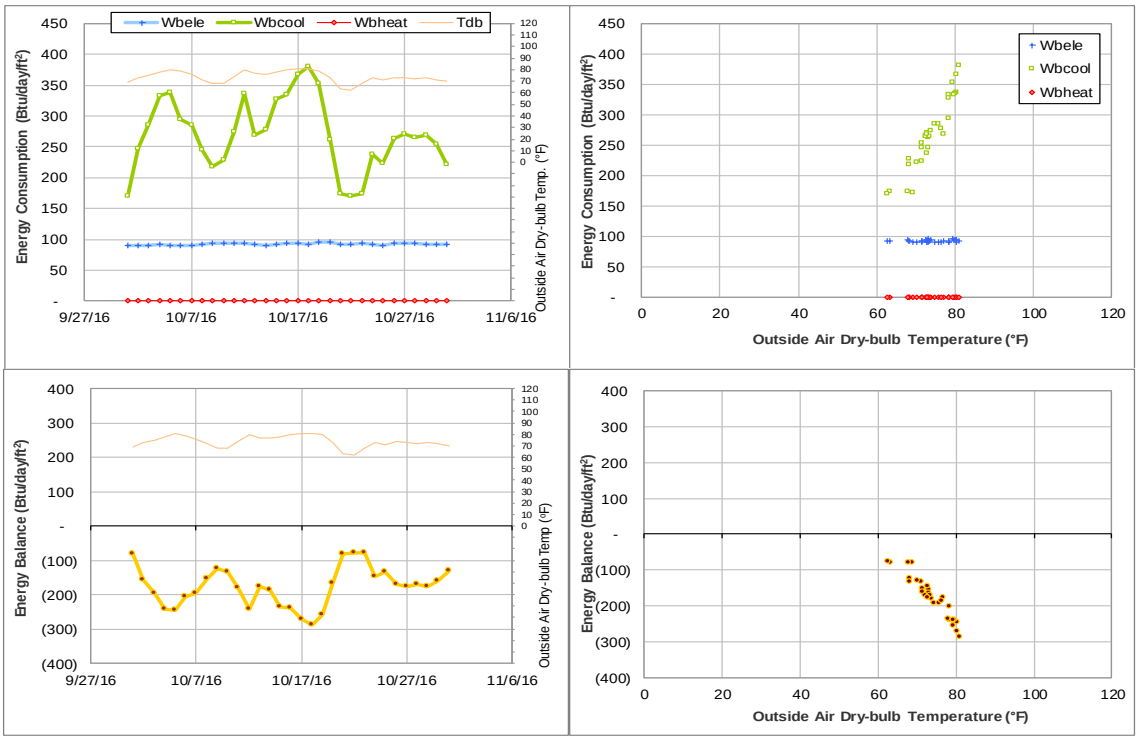


Figure IV-108 All Faiths Chapel TAMU BLDG # 512 Energy Balance Plot during October 2016

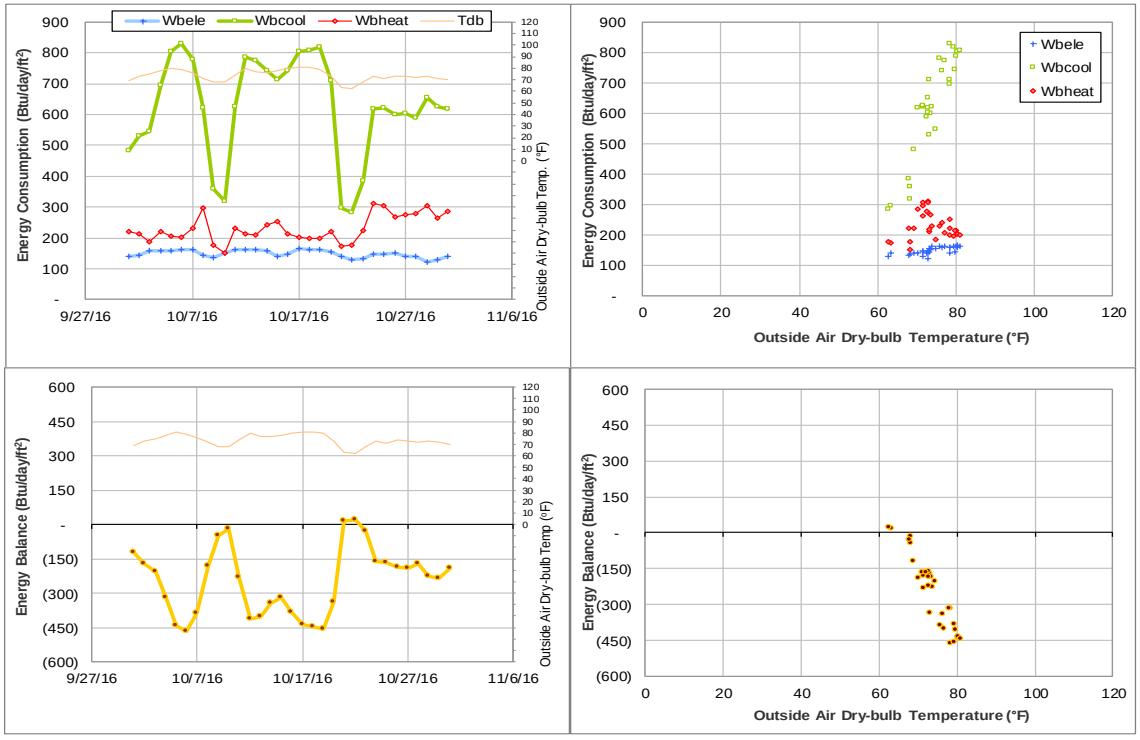


Figure IV-109 Doherty Building TAMU BLDG # 513 Energy Balance Plot during October 2016

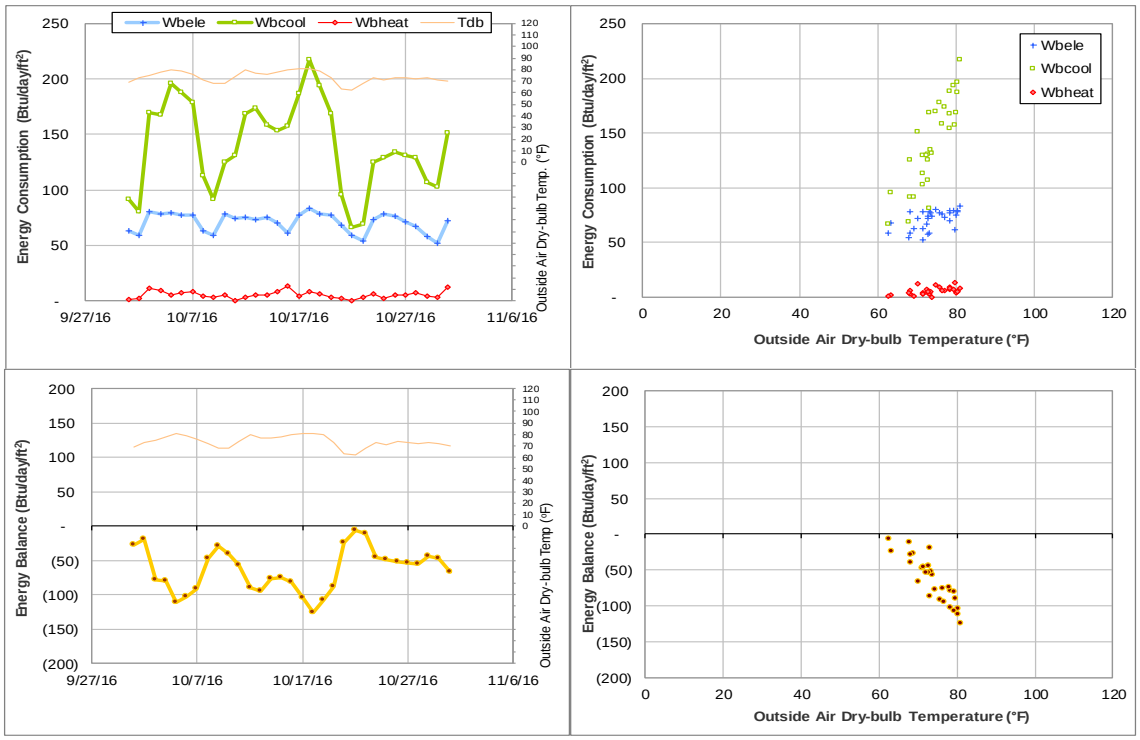


Figure IV-110 Munnerlyn Astronomy & Space Sciences Engineering TAMU BLDG # 514 Energy Balance Plot during October 2016

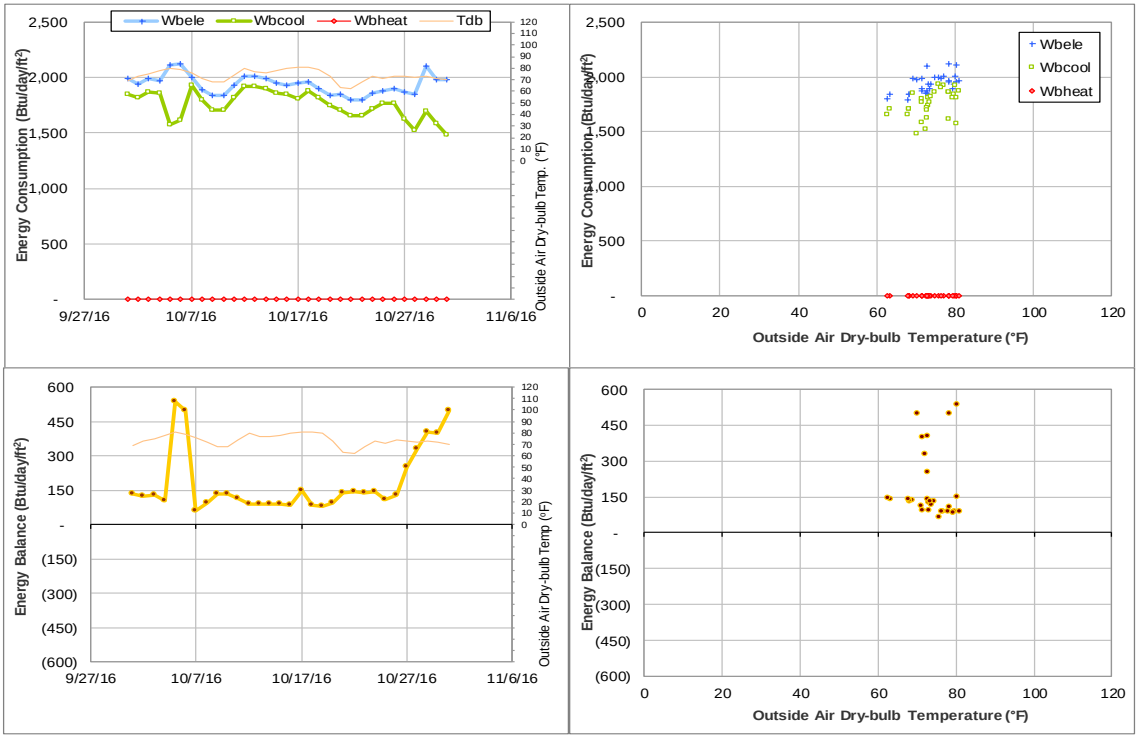


Figure IV-111 Computing Services Center TAMU BLDG # 516 Energy Balance Plot during October 2016

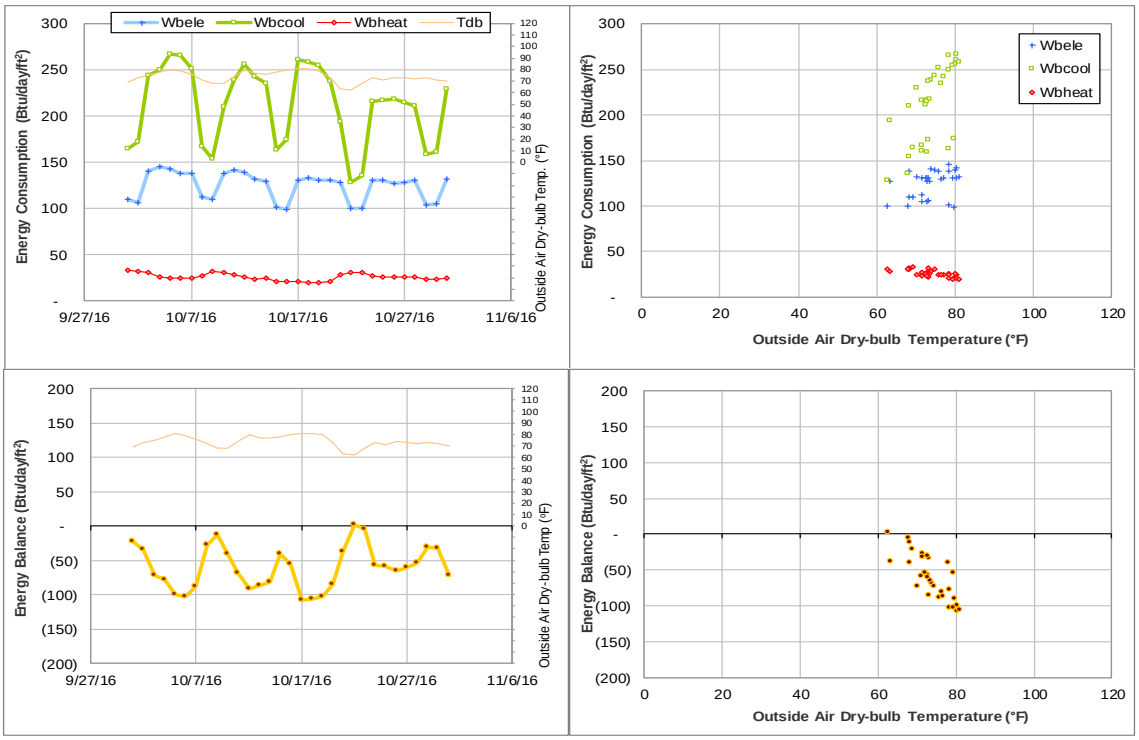


Figure IV-112 Beutel Health Center TAMU BLDG # 520 Energy Balance Plot during October 2016

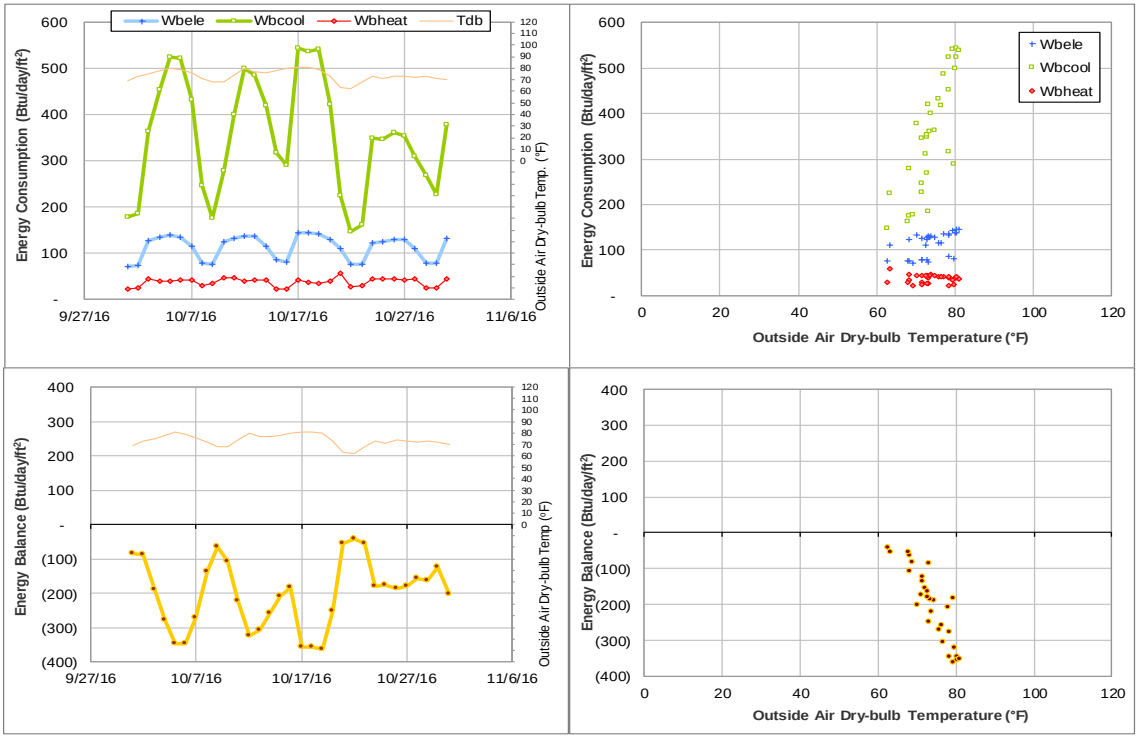


Figure IV-113 Heldenfels Hall TAMU BLDG # 521 Energy Balance Plot during October 2016

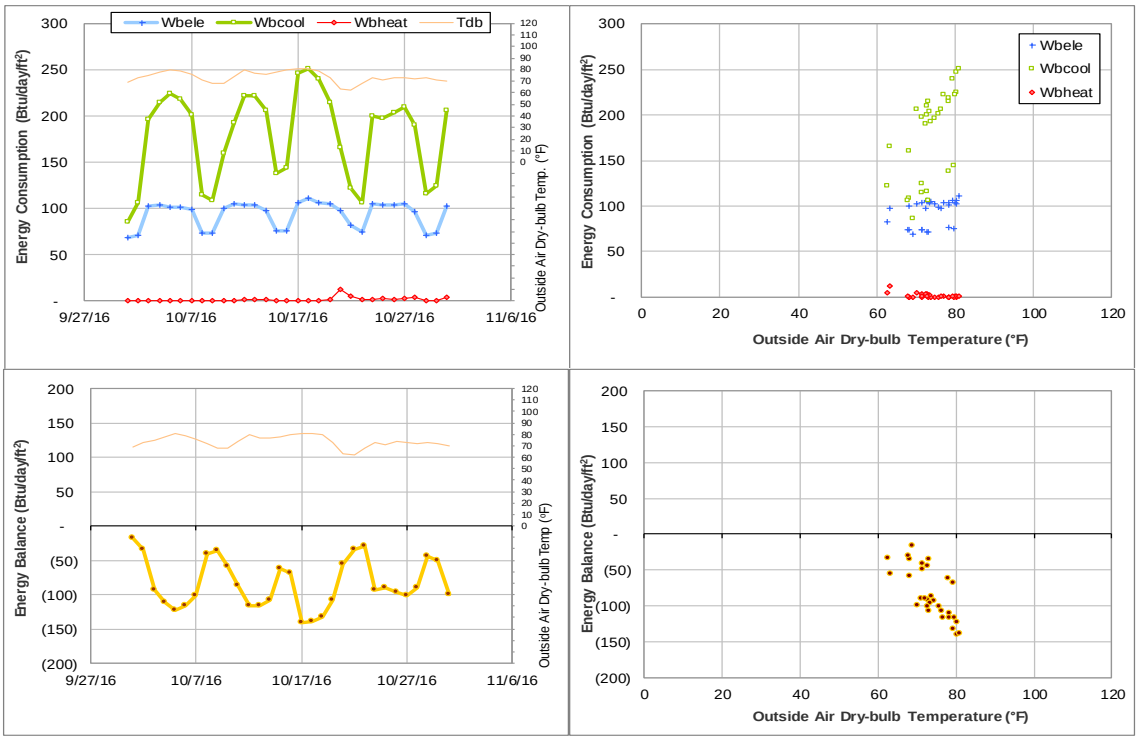


Figure IV-114 Blocker building TAMU BLDG # 524 Energy Balance Plot during October 2016

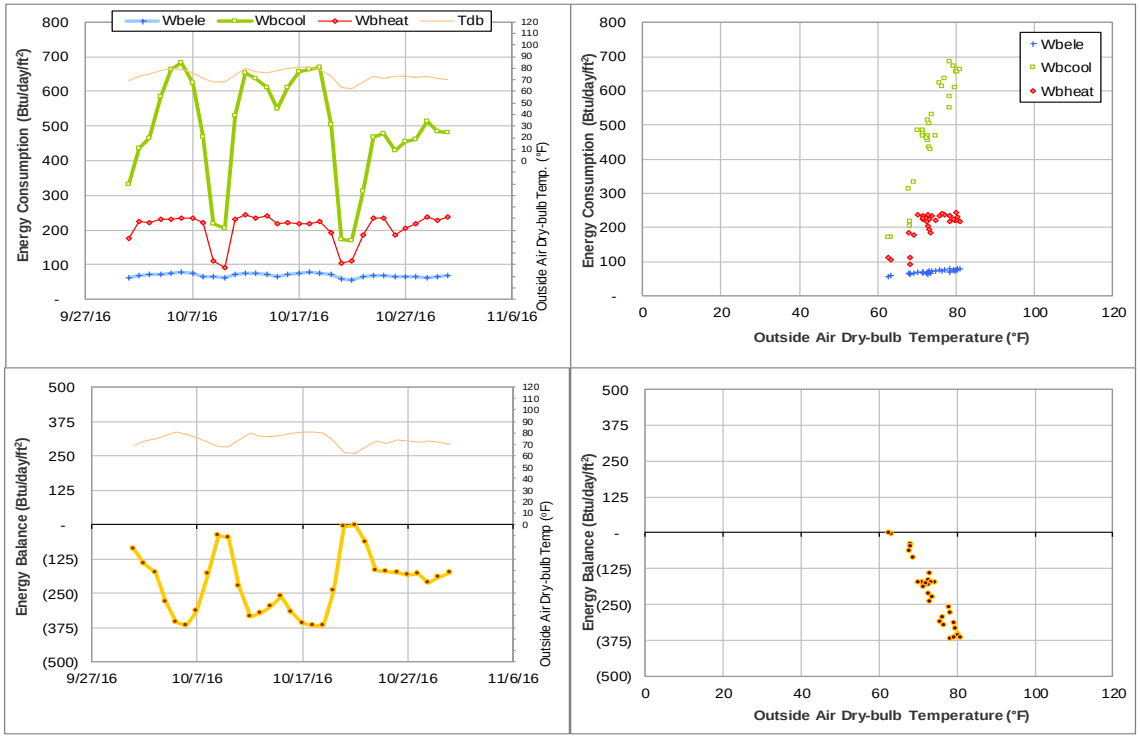


Figure IV-115 Clements Residence Hall TAMU BLDG # 548 Energy Balance Plot during October 2016

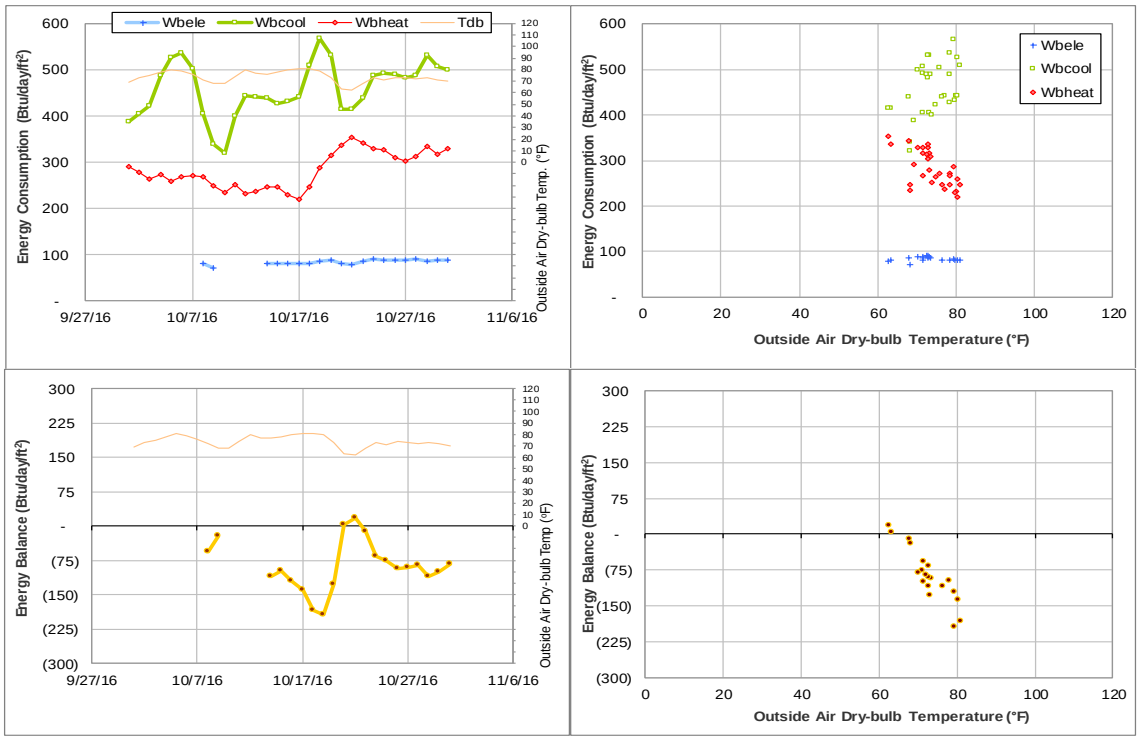


Figure IV-116 Haas Residence Hall TAMU BLDG # 549 Energy Balance Plot during October 2016

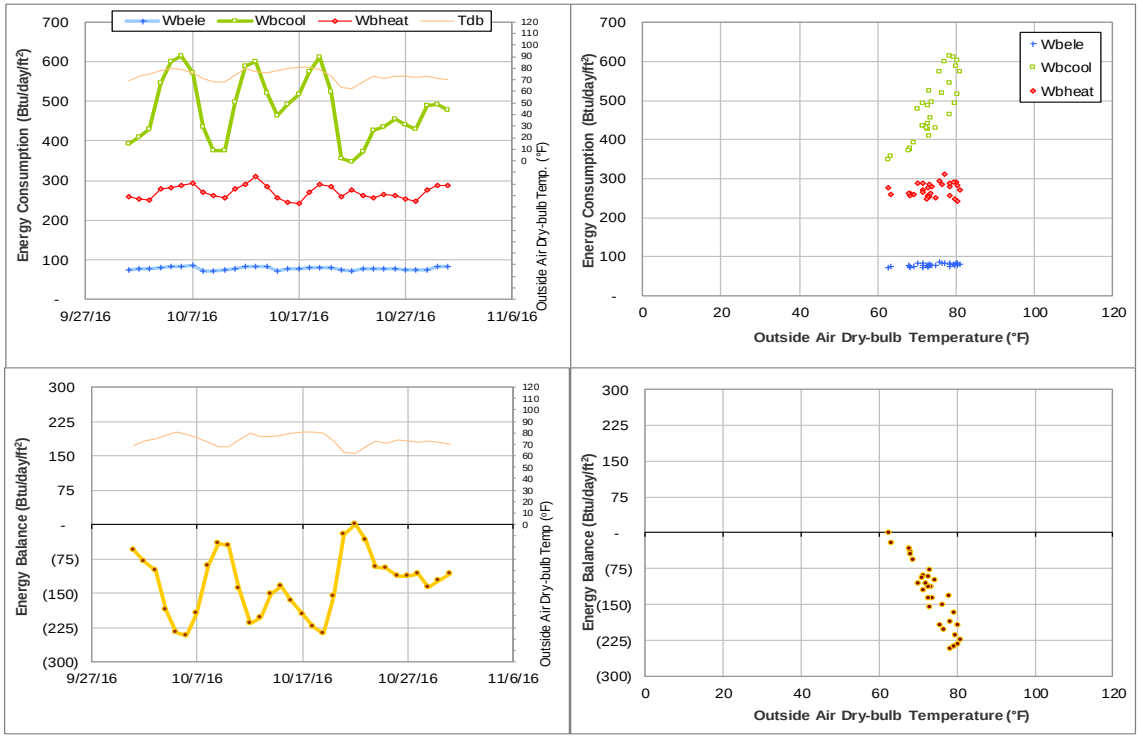


Figure IV-117 McFadden Residence Hall TAMU BLDG # 550 Energy Balance Plot during October 2016

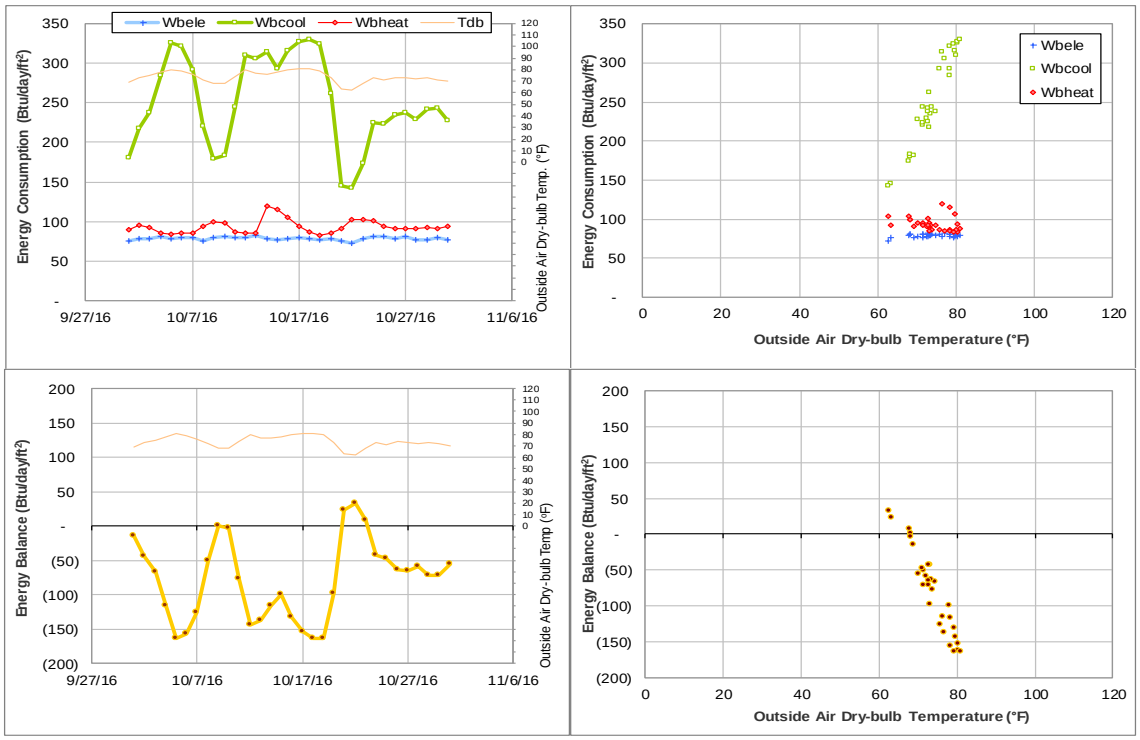


Figure IV-118 Neeley Residence Hall TAMU BLDG # 652 Energy Balance Plot during October 2016

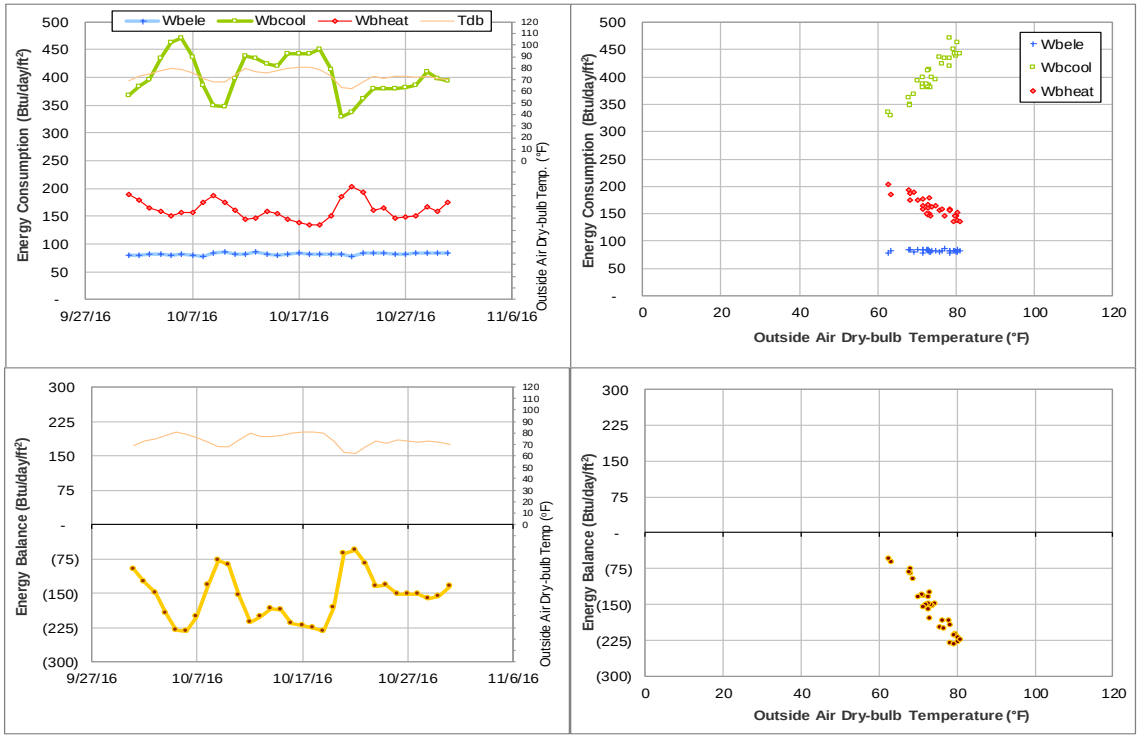


Figure IV-119 Hobby Residence Hall TAMU BLDG # 653 Energy Balance Plot during October 2016

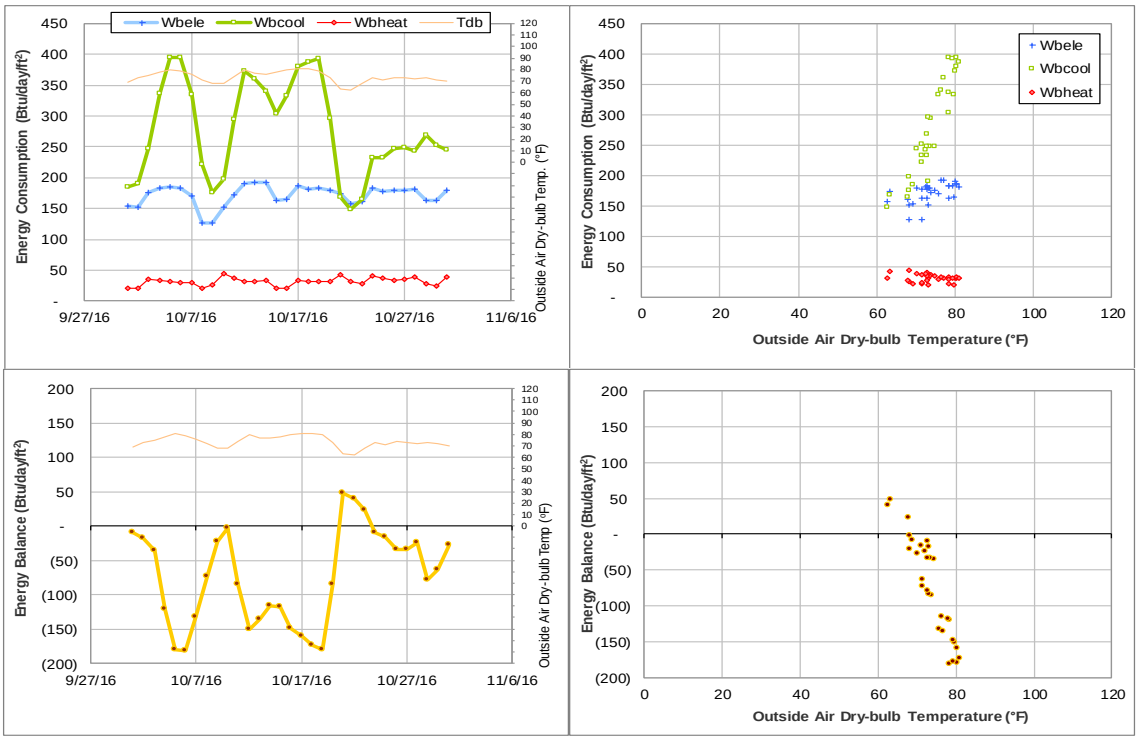


Figure IV-120 Wisenbaker Engineering Research Center TAMU BLDG # 682 Energy Balance Plot during October 2016

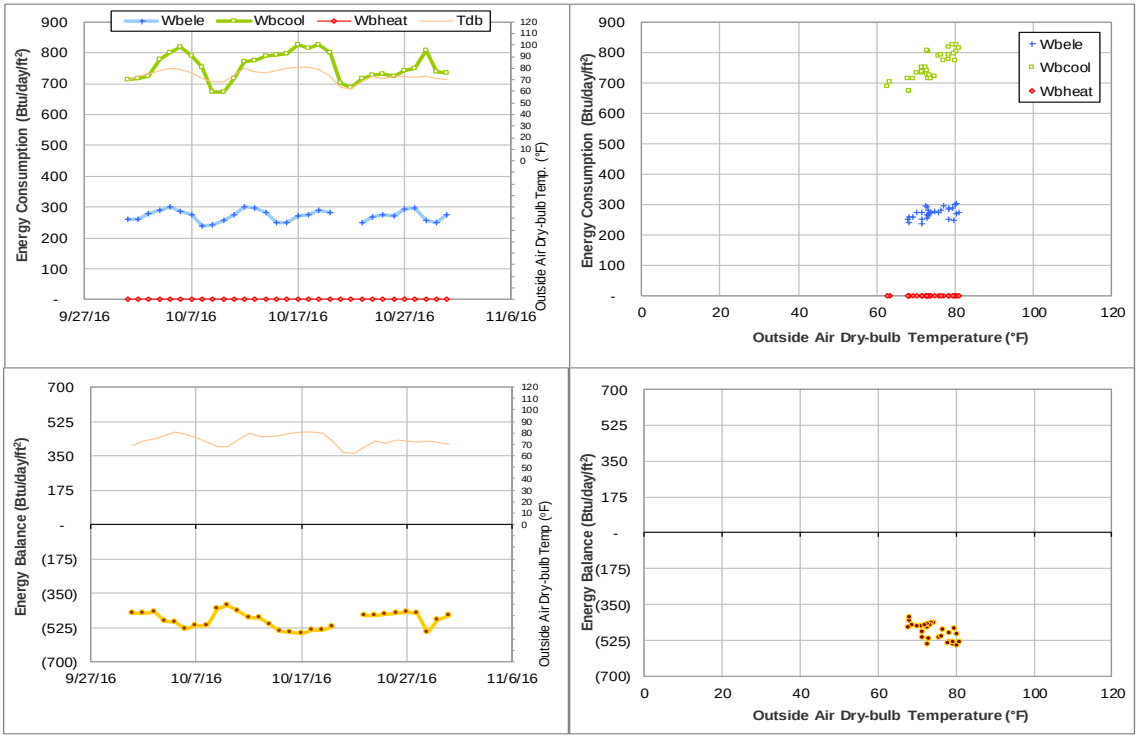


Figure IV-121 McNew Laboratory TAMU BLDG # 740 Energy Balance Plot during October 2016

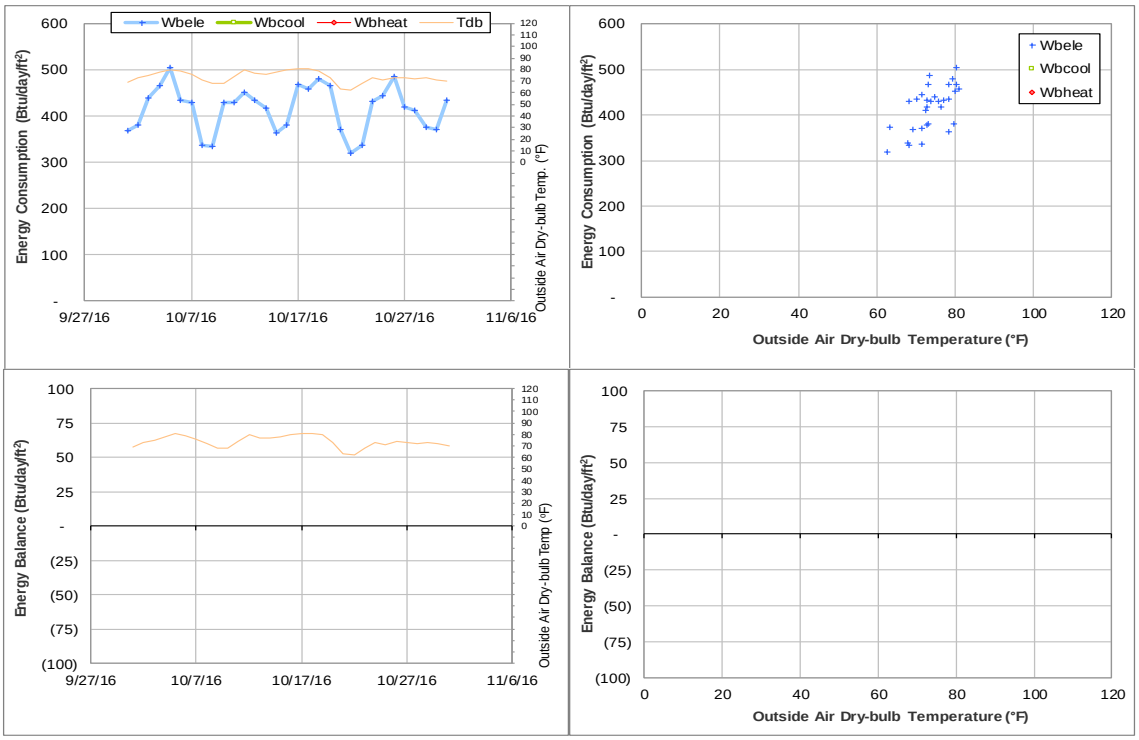


Figure IV-122 Soil Testing Labs TAMU BLDG # 806 Energy Balance Plot during October 2016

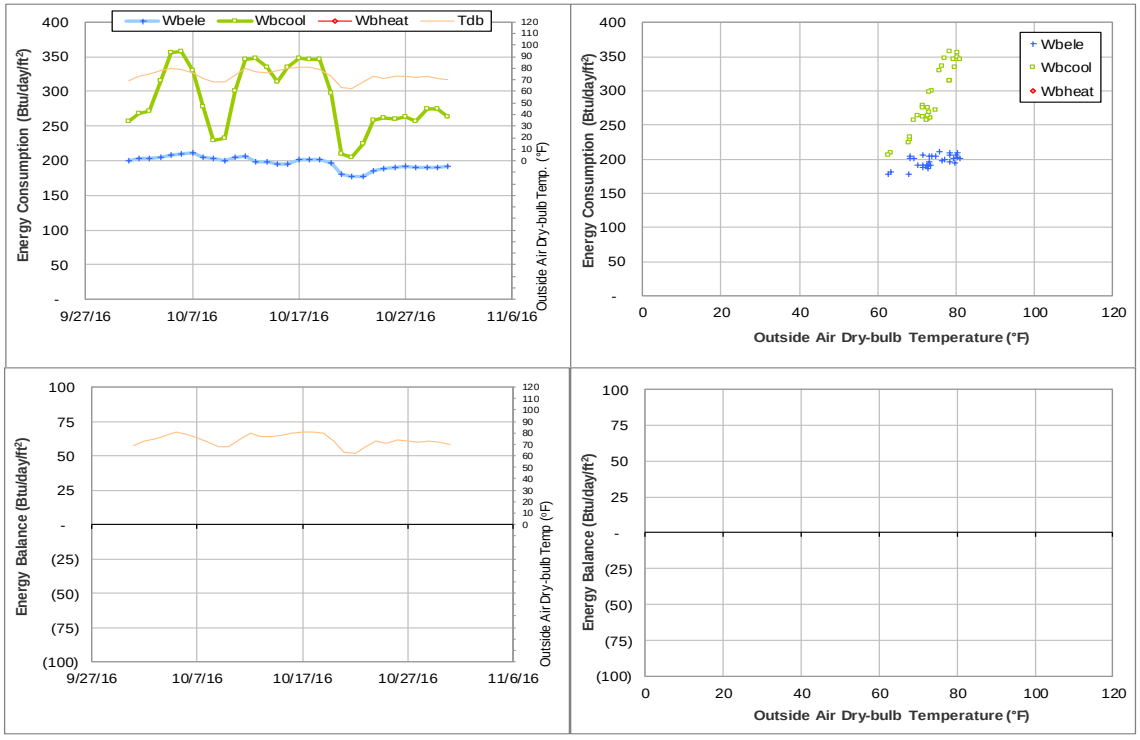


Figure IV-123 Entomology Research Lab TAMU BLDG # 815 Energy Balance Plot during October 2016

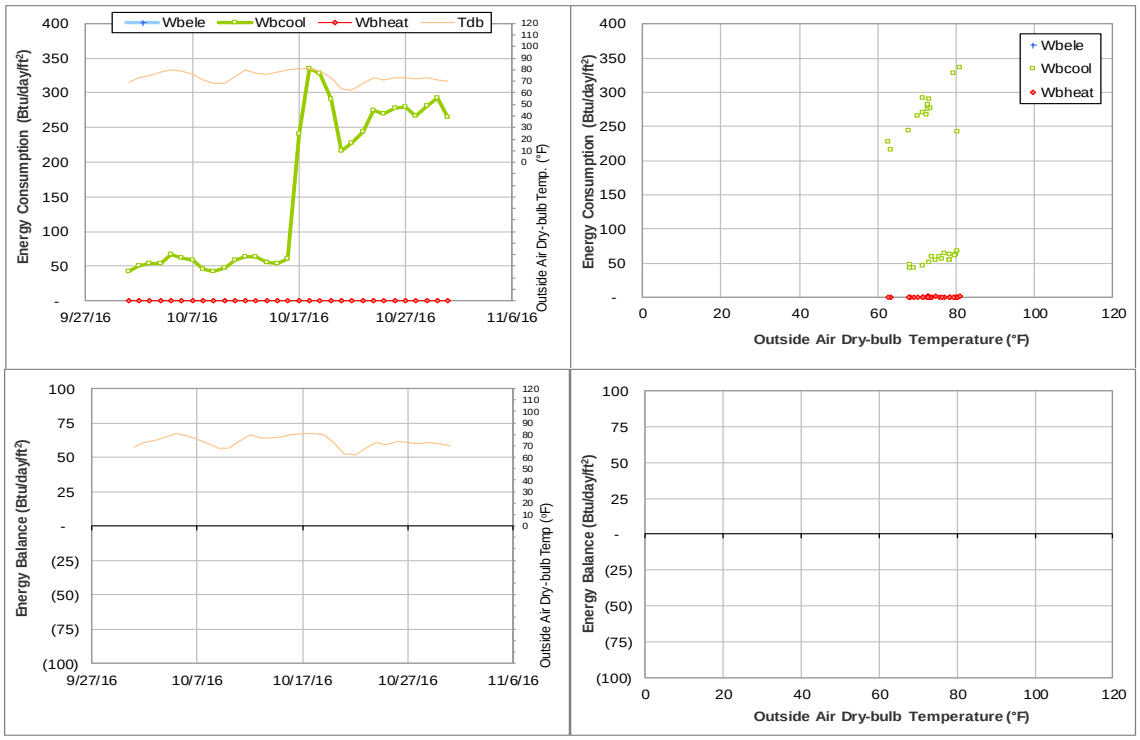


Figure IV-124 TVMC-Small Animal Building TAMU BLDG # 880 Energy Balance Plot during October 2016

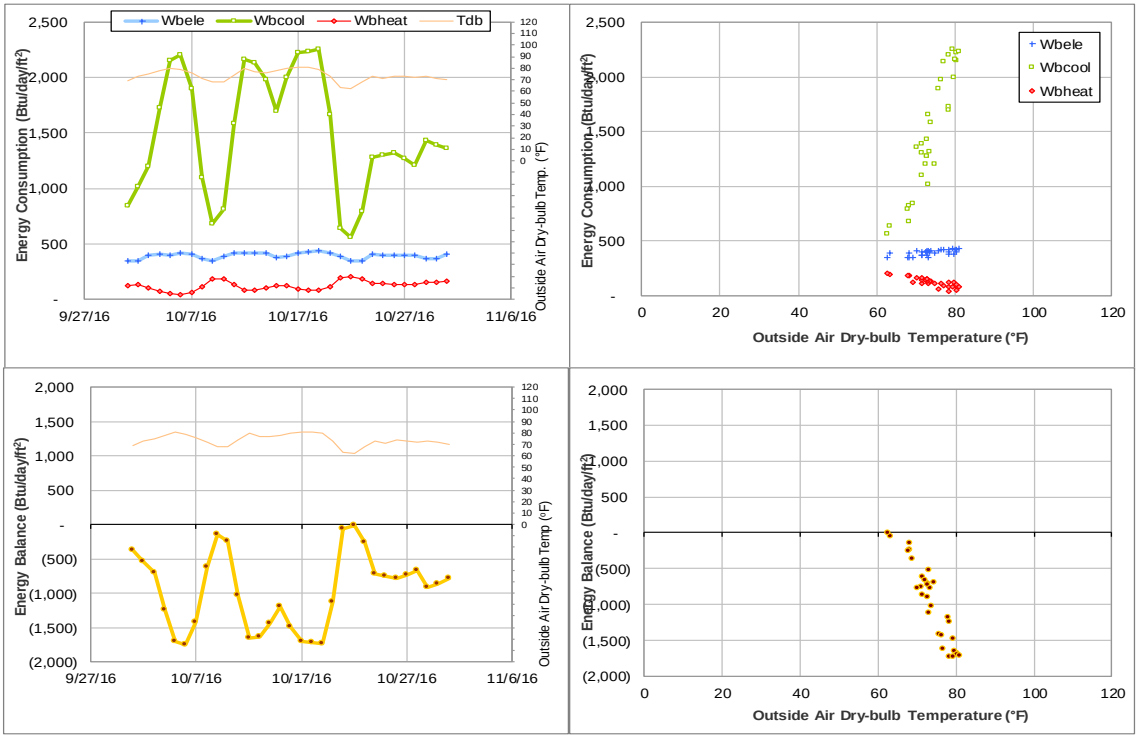


Figure IV-125 Laboratory Animal Care Building TAMU BLDG # 972 Energy Balance Plot during October 2016

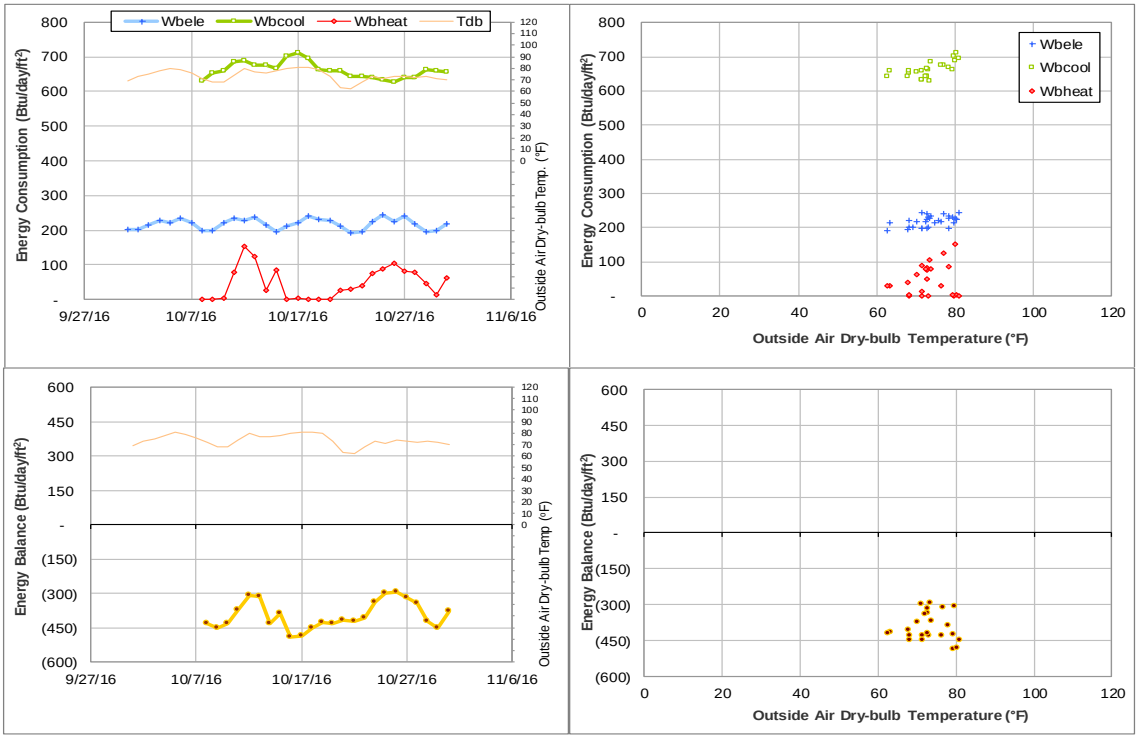


Figure IV-126 Vivarium III TAMU BLDG # 1020 Energy Balance Plot during October 2016

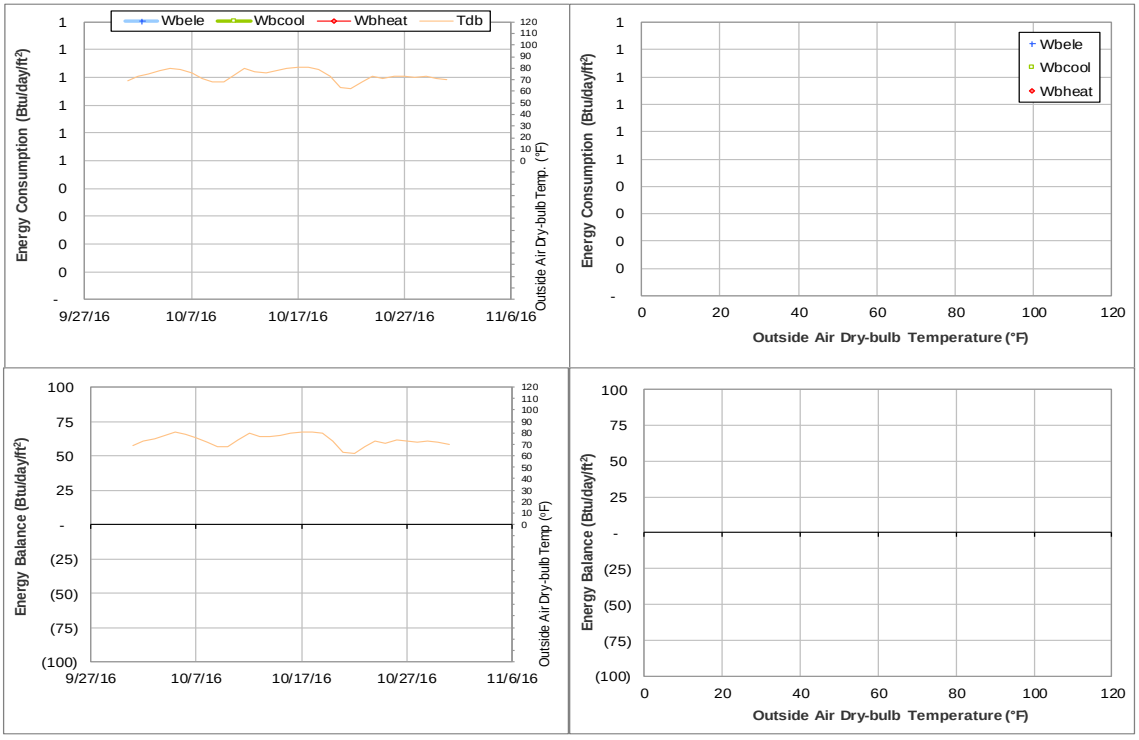


Figure IV-127 Texas Vet Med Diagnostic Lab TAMU BLDG # 1041 Energy Balance Plot during October 2016

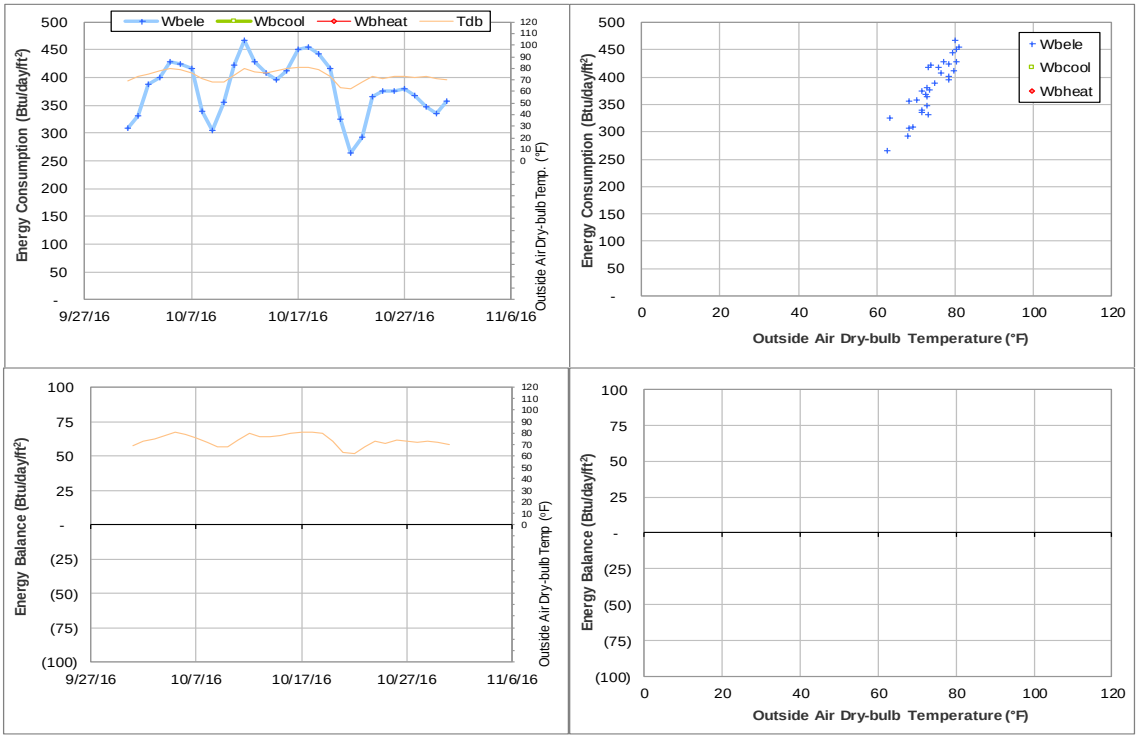


Figure IV-128 Forest Science Laboratory Building TAMU BLDG # 1042 Energy Balance Plot during October 2016

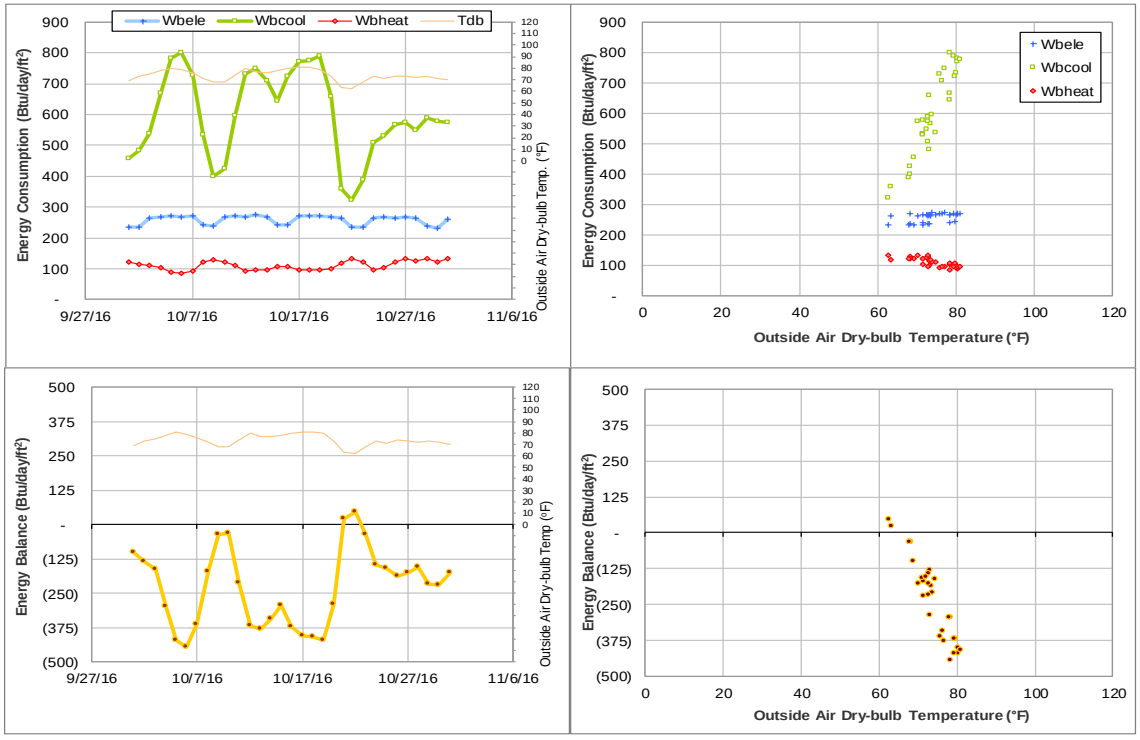


Figure IV-129 Veterinary Small Animal Hospital TAMU BLDG # 1085 Energy Balance Plot during October 2016

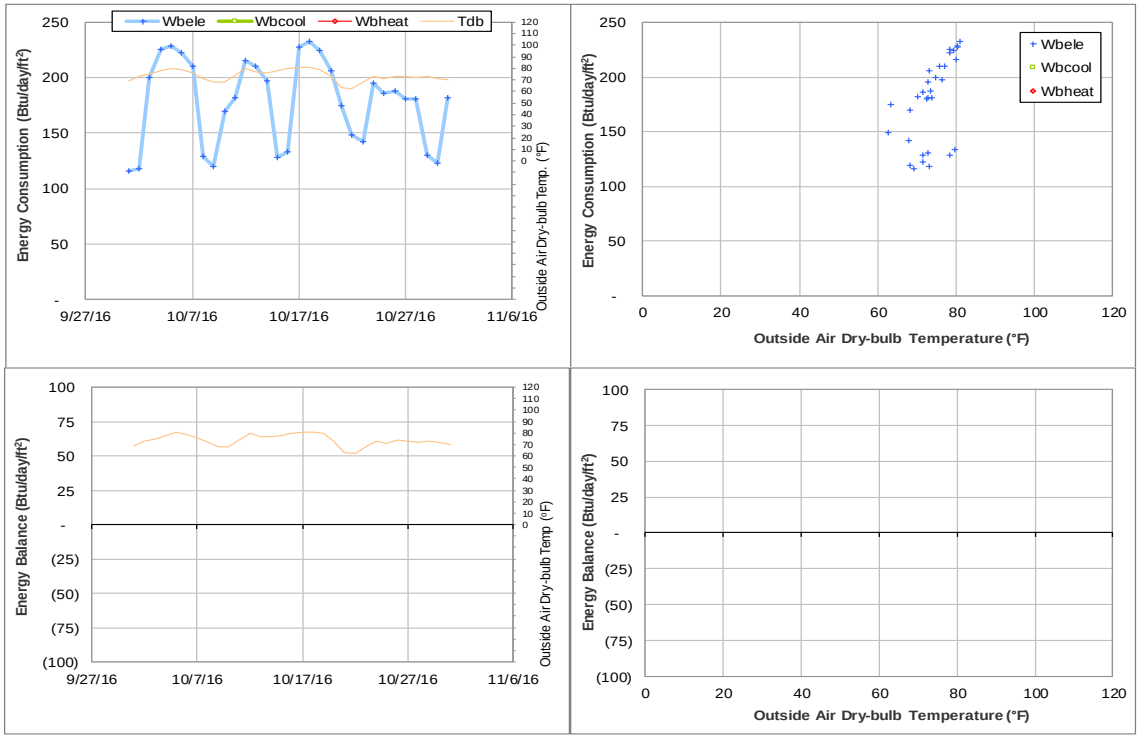


Figure IV-130 Utilities Energy Office Annex TAMU BLDG # 1089 Energy Balance Plot during October 2016

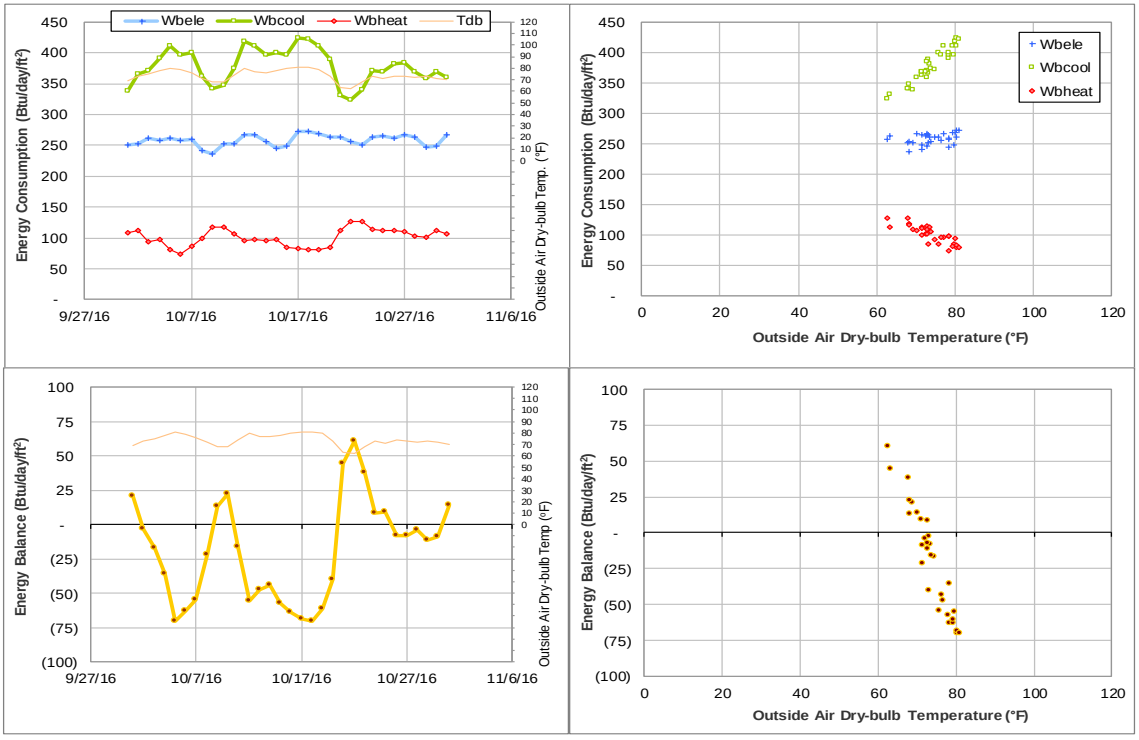


Figure IV-131 Biological Control Facility TAMU BLDG # 1146 Energy Balance Plot during October 2016

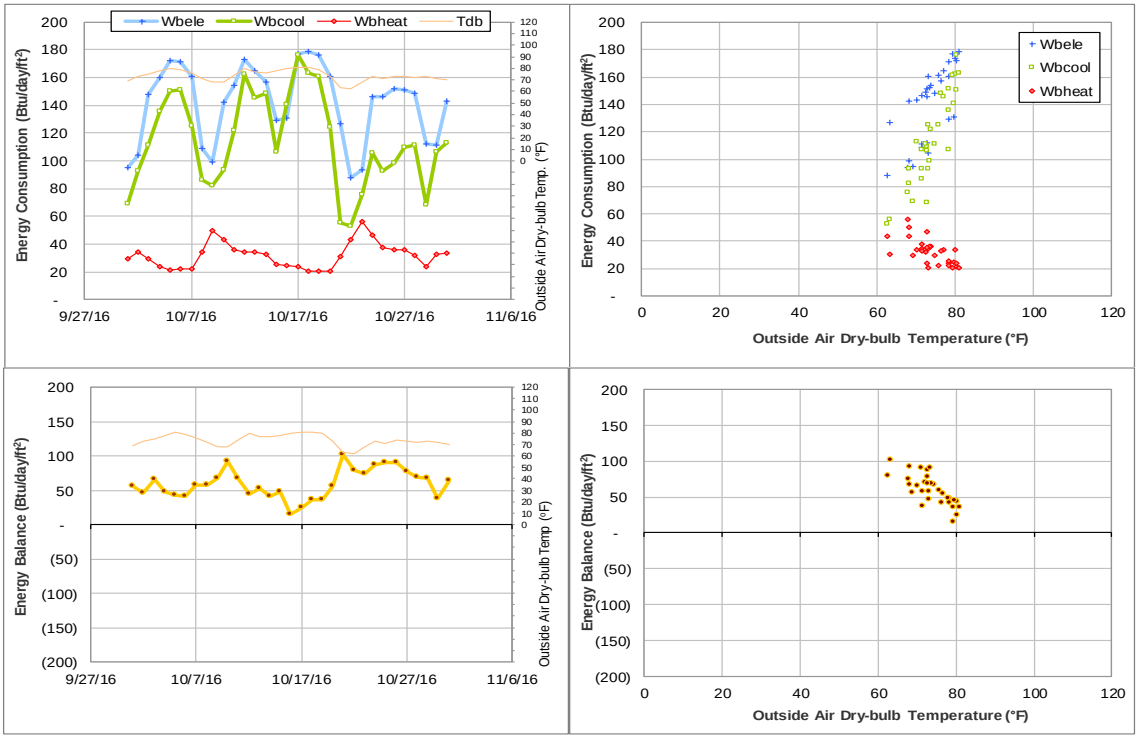


Figure IV-132 Physical Plant Administration & Shops TAMU BLDG # 1156 Energy Balance Plot during October 2016

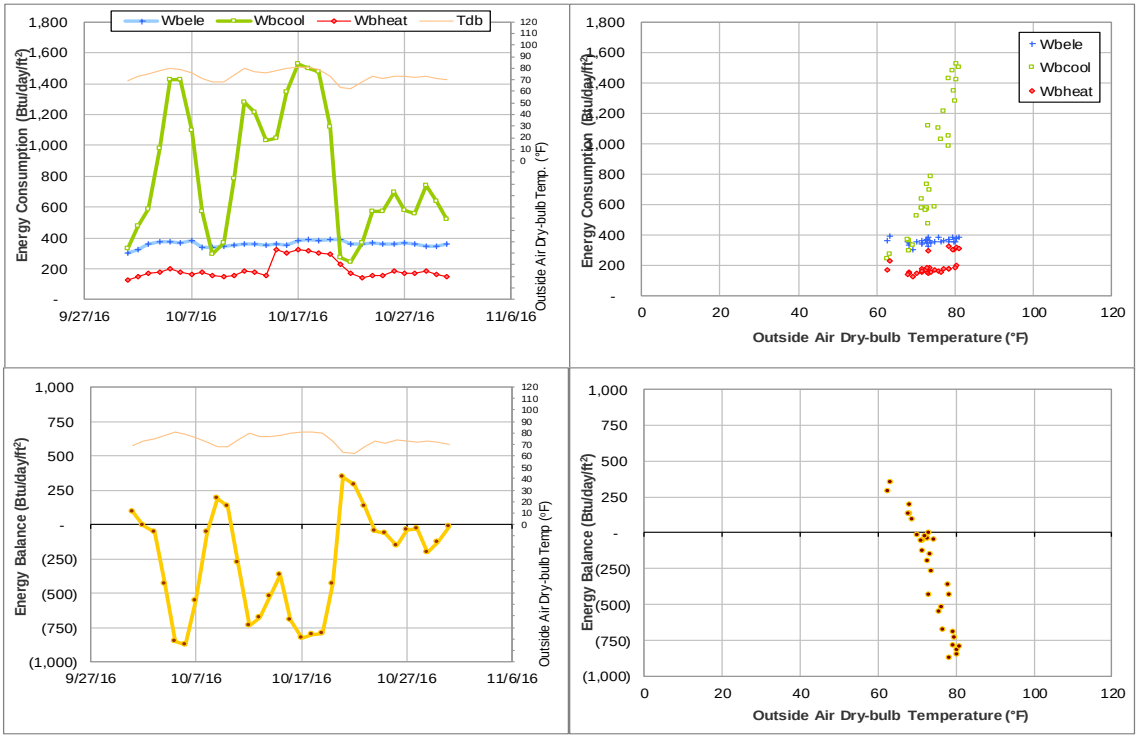


Figure IV-133 Veterinary Anatomic Pathology TAMU BLDG # 1184 Energy Balance Plot during October 2016

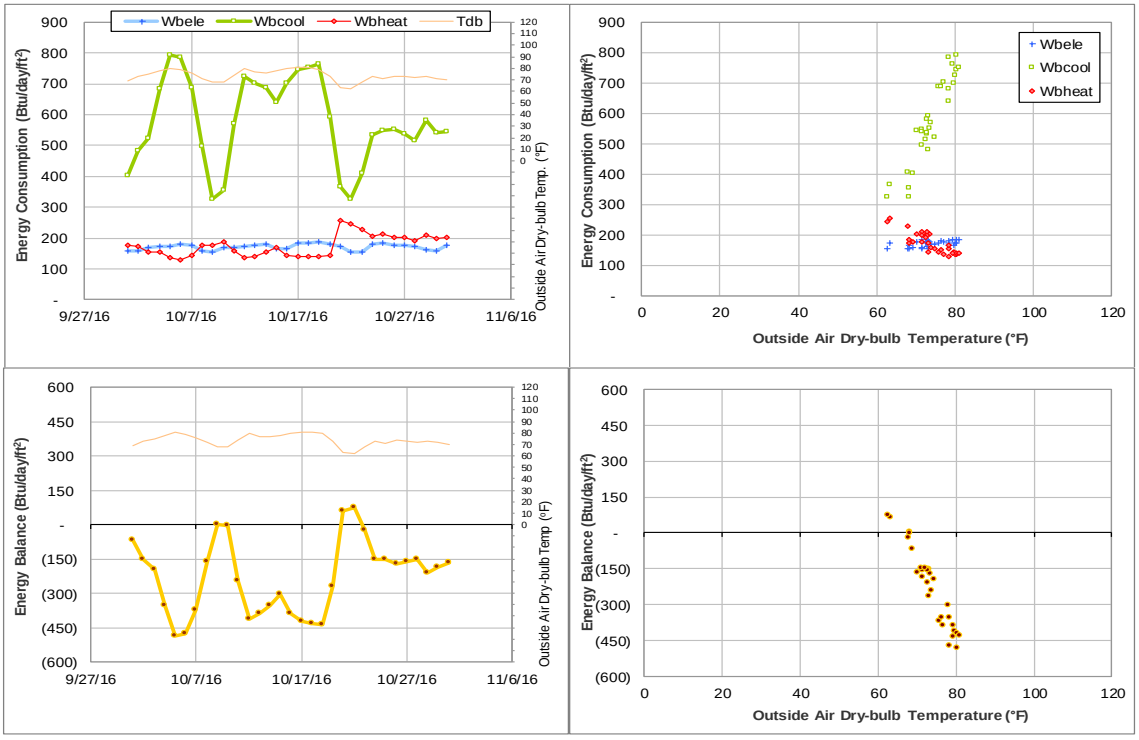


Figure IV-134 Veterinary Large Animal Hospital TAMU BLDG # 1194 Energy Balance Plot during October 2016

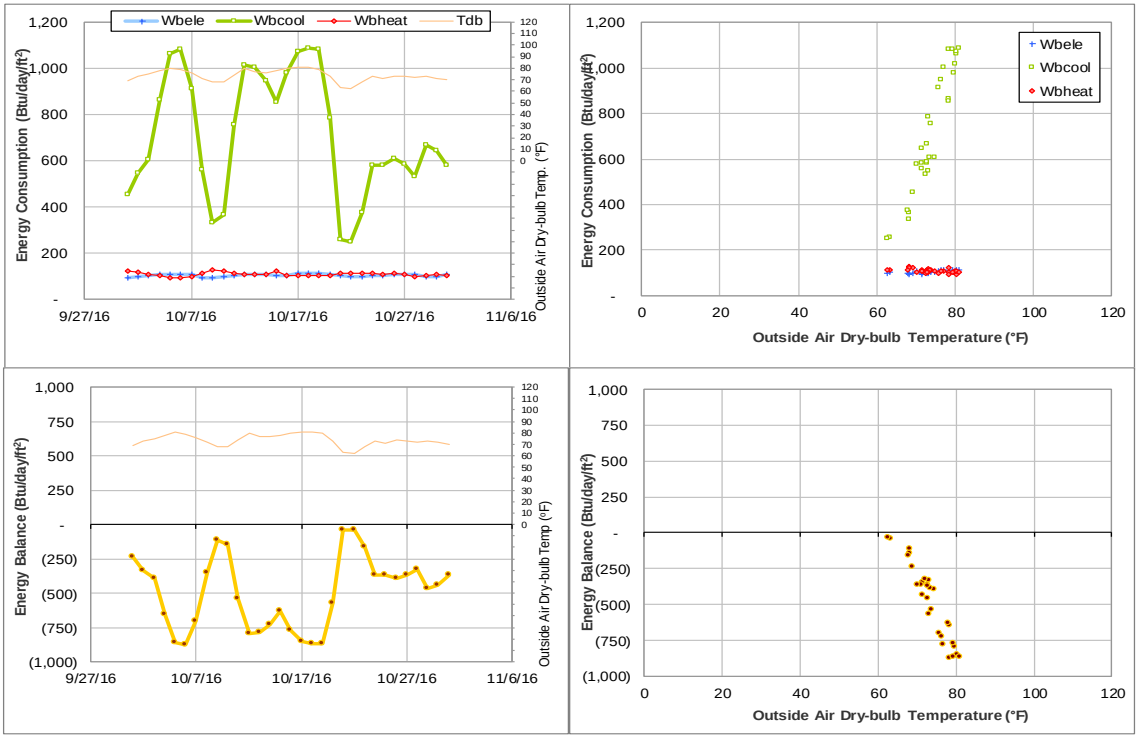


Figure IV-135 Veterinary Research Building TAMU BLDG # 1197 Energy Balance Plot during October 2016

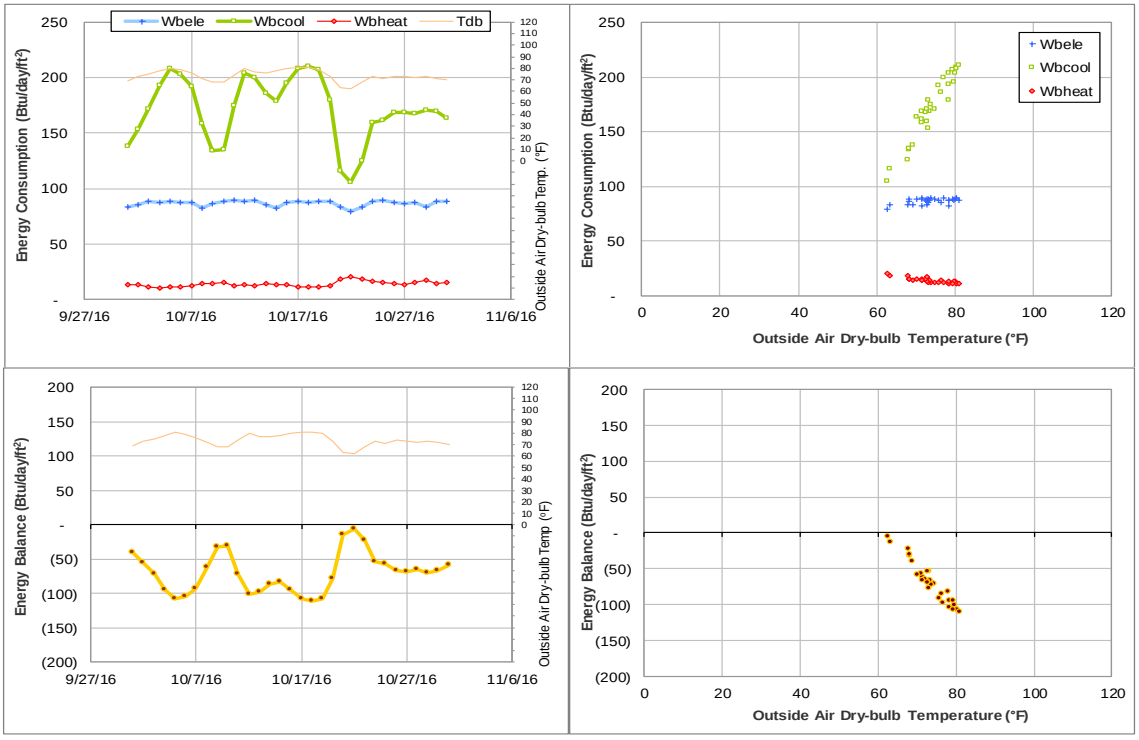


Figure IV-136 Hullabaloo Residence Hall TAMU BLDG # 1416 Energy Balance Plot during October 2016

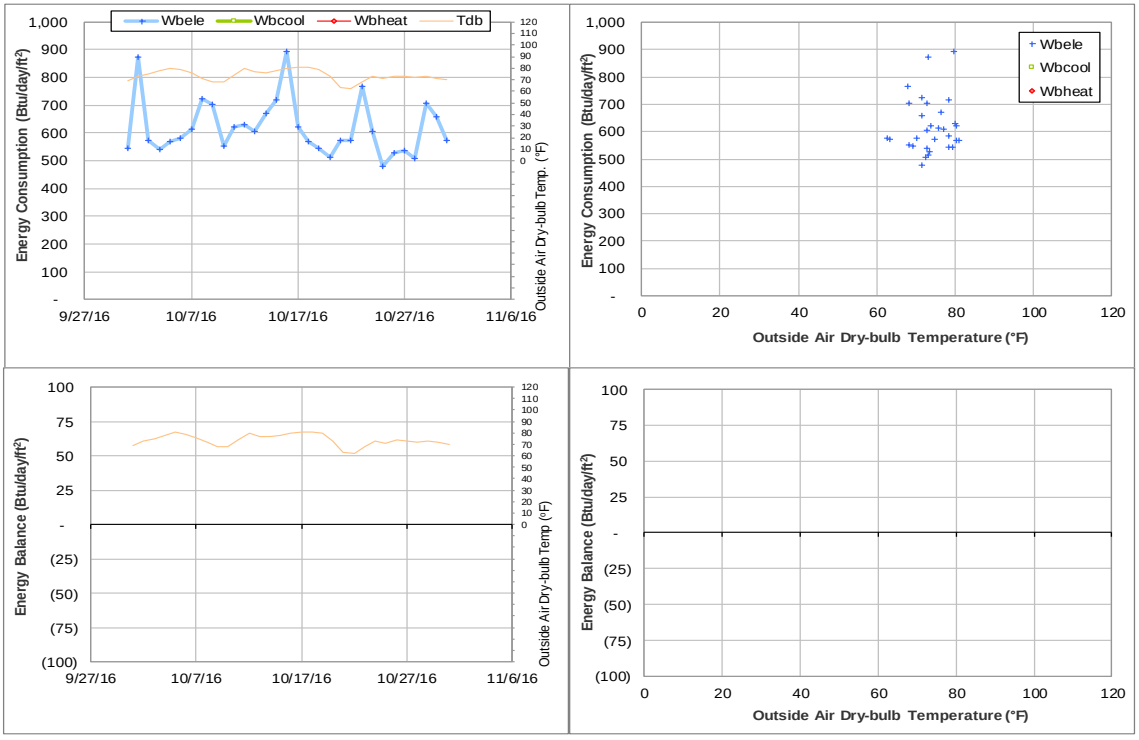


Figure IV-137 University Apartments - Laundry at the Gardens TAMU BLDG # 1450 Energy Balance Plot during October 2016

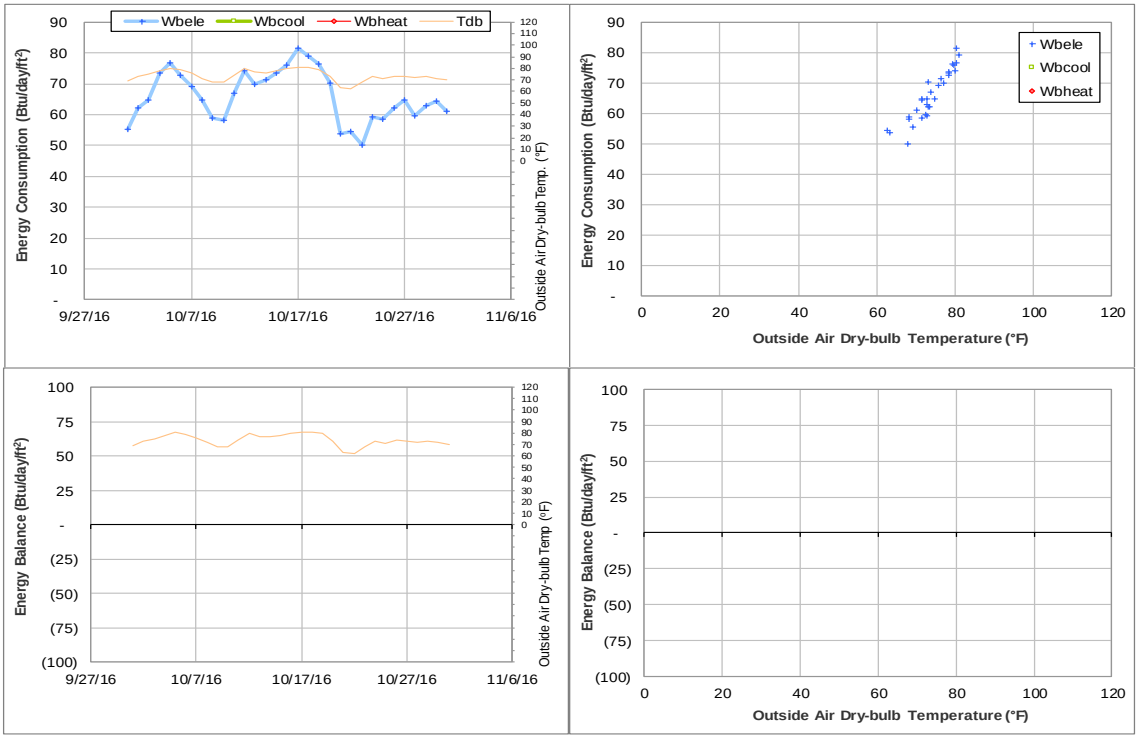


Figure IV-138 University Apartments - The Gardens J TAMU BLDG # 1451 Energy Balance Plot during October 2016

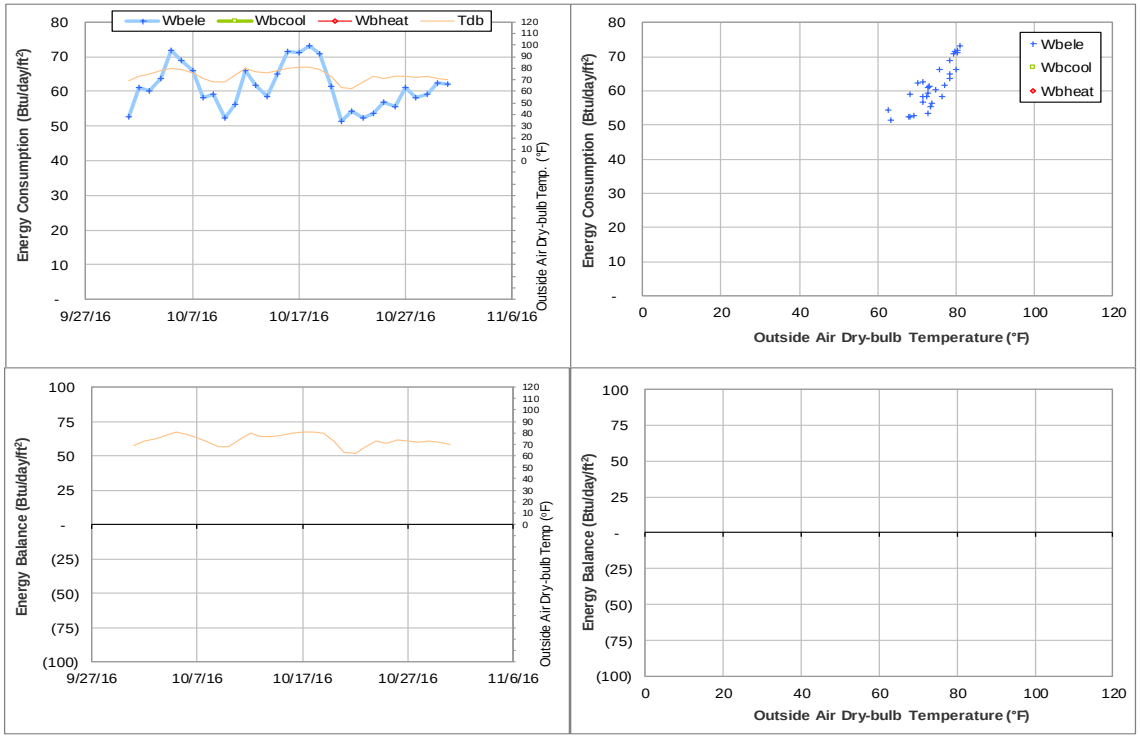


Figure IV-139 University Apartments - The Gardens K TAMU BLDG # 1452 Energy Balance Plot during October 2016

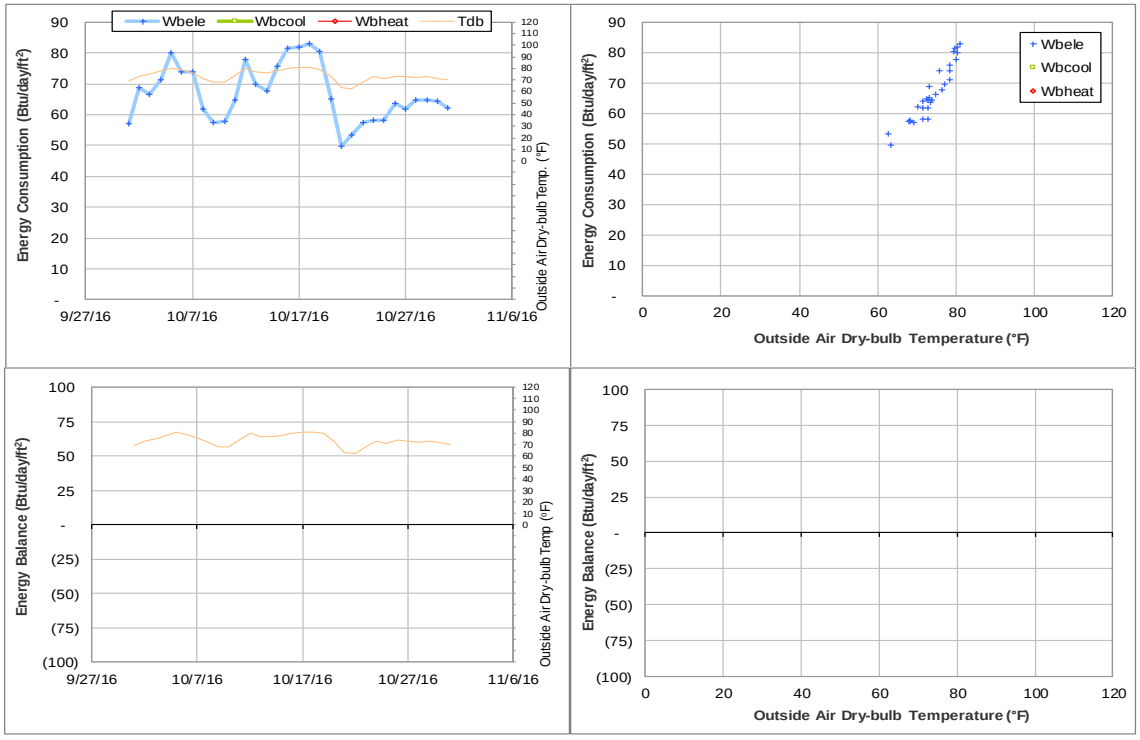


Figure IV-140 University Apartments - The Gardens L TAMU BLDG # 1453 Energy Balance Plot during October 2016

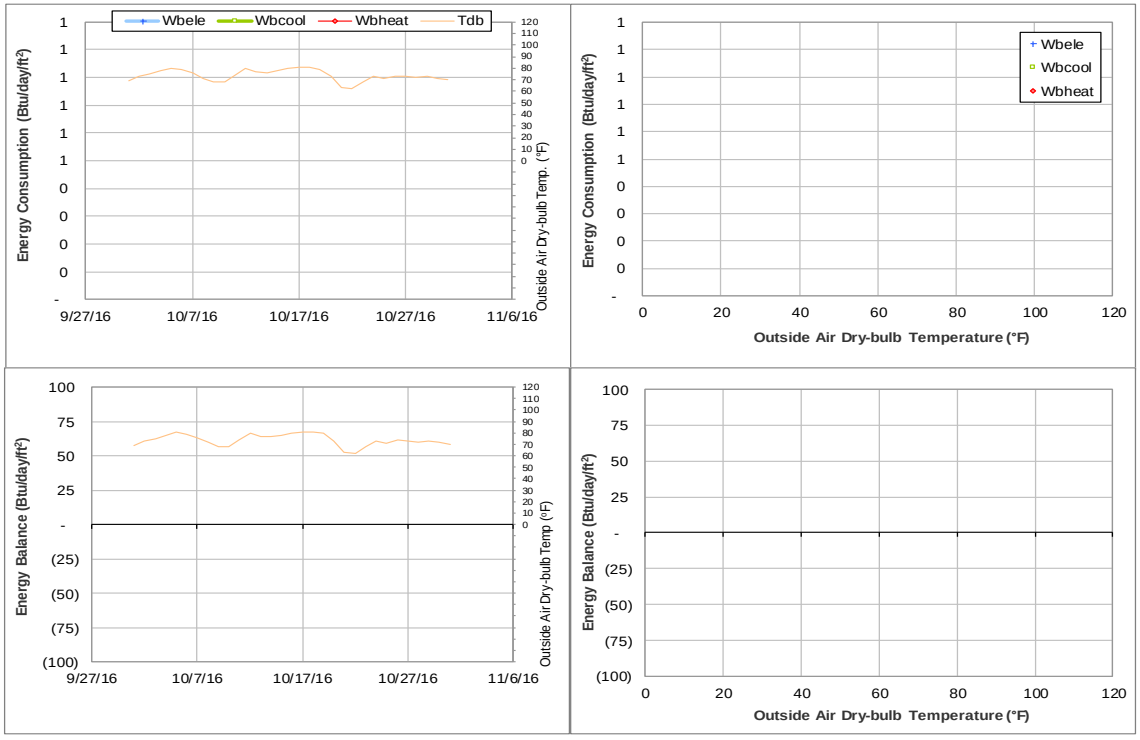


Figure IV-141 University Apartments - The Gardens F TAMU BLDG # 1454 Energy Balance Plot during October 2016

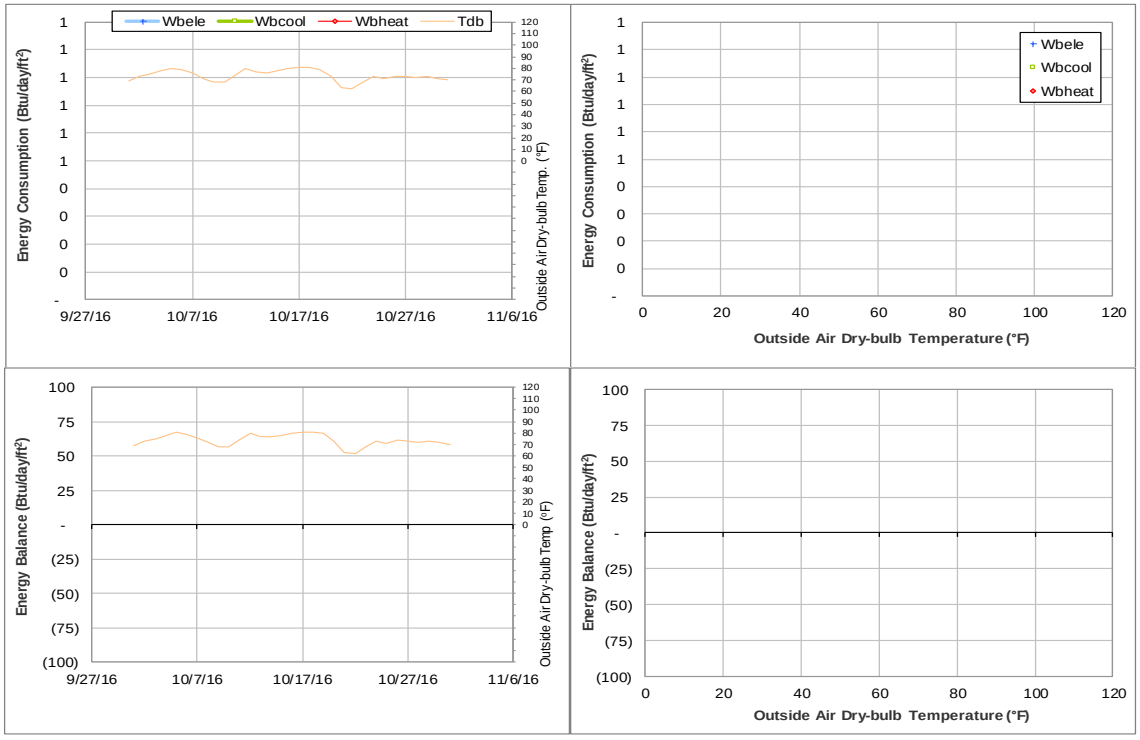


Figure IV-142 University Apartments - The Gardens G TAMU BLDG # 1455 Energy Balance Plot during October 2016

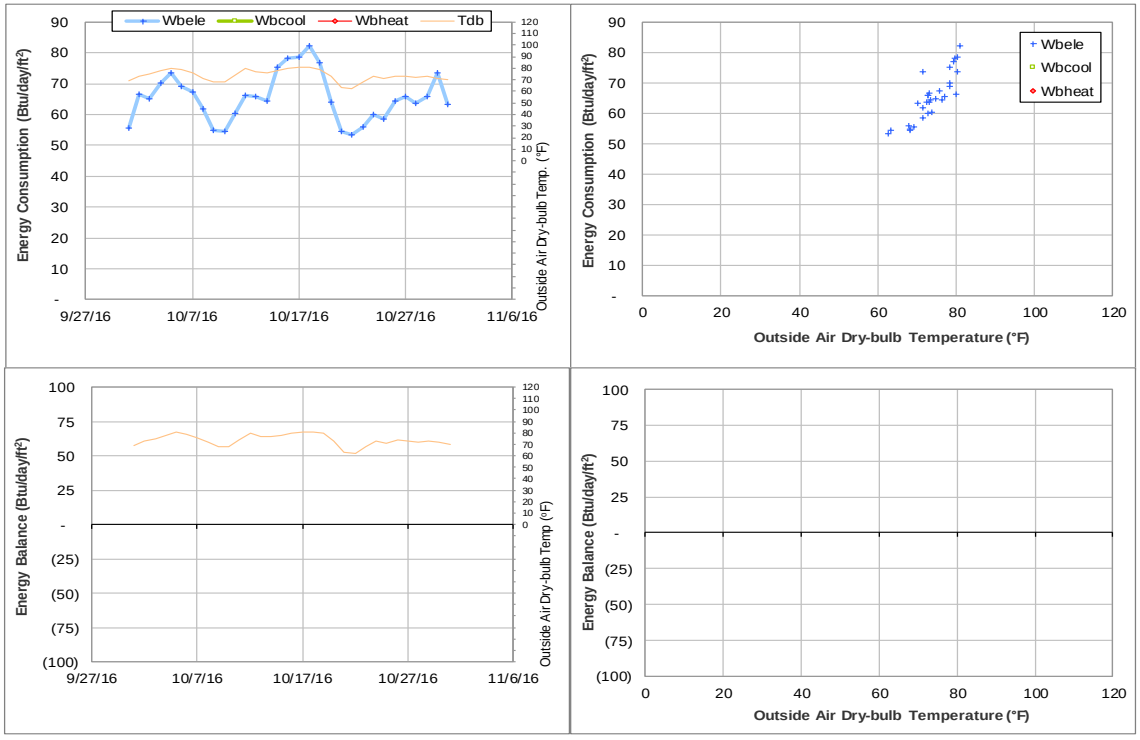


Figure IV-143 University Apartments - The Gardens H TAMU BLDG # 1456 Energy Balance Plot during October 2016

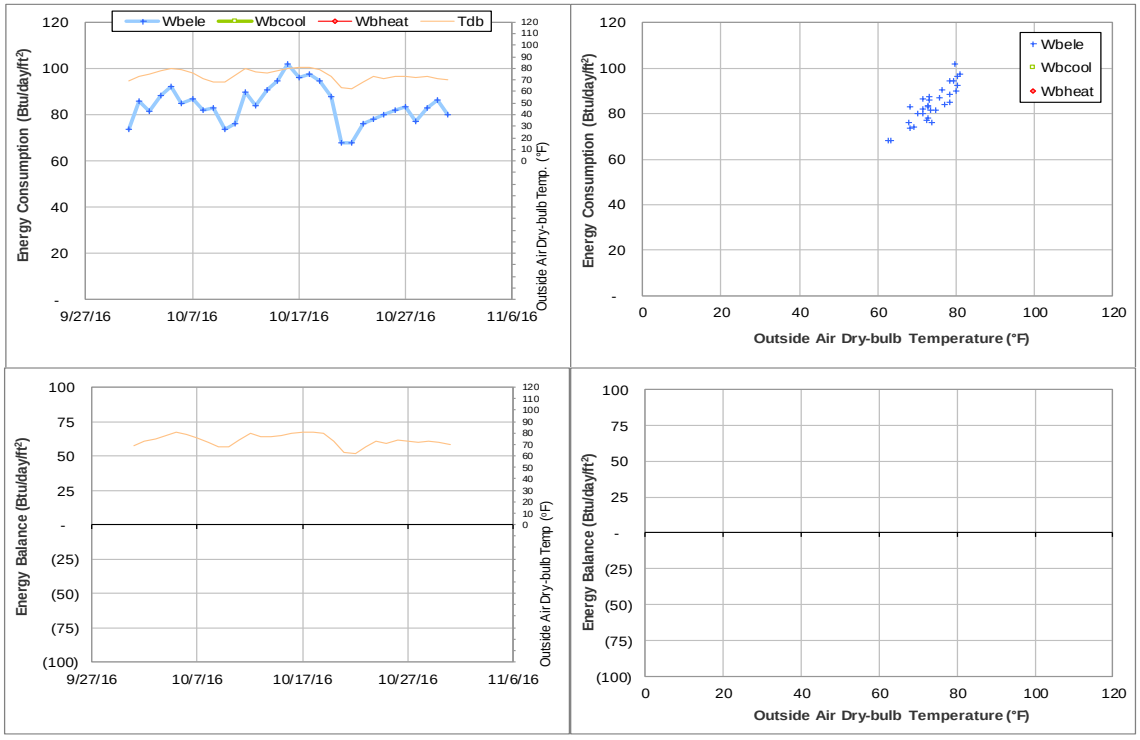


Figure IV-144 University Apartments - The Gardens M TAMU BLDG # 1457 Energy Balance Plot during October 2016

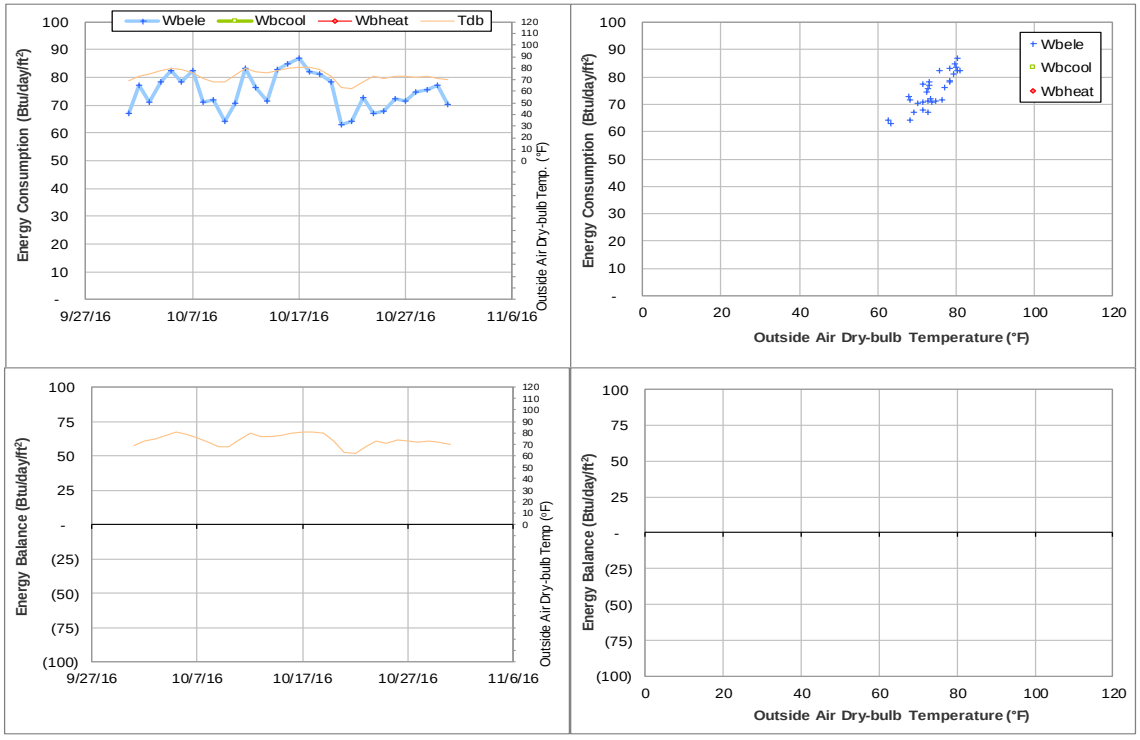


Figure IV-145 University Apartments - The Gardens N TAMU BLDG # 1458 Energy Balance Plot during October 2016

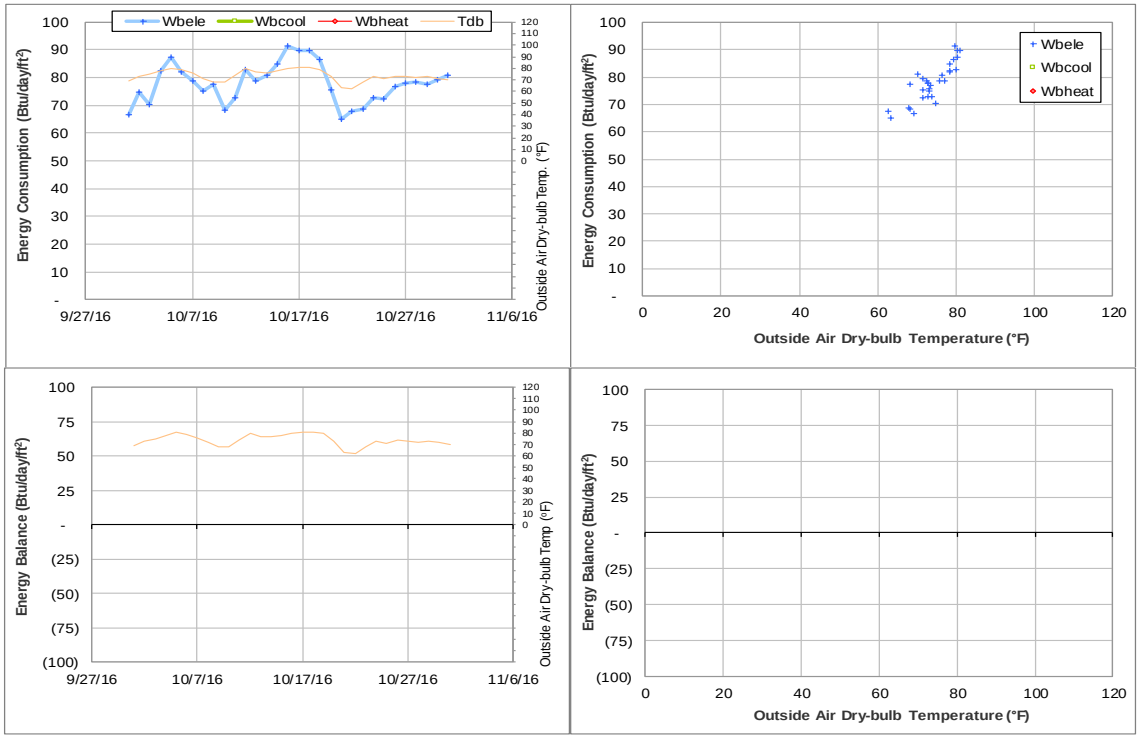


Figure IV-146 University Apartments - The Gardens P TAMU BLDG # 1459 Energy Balance Plot during October 2016

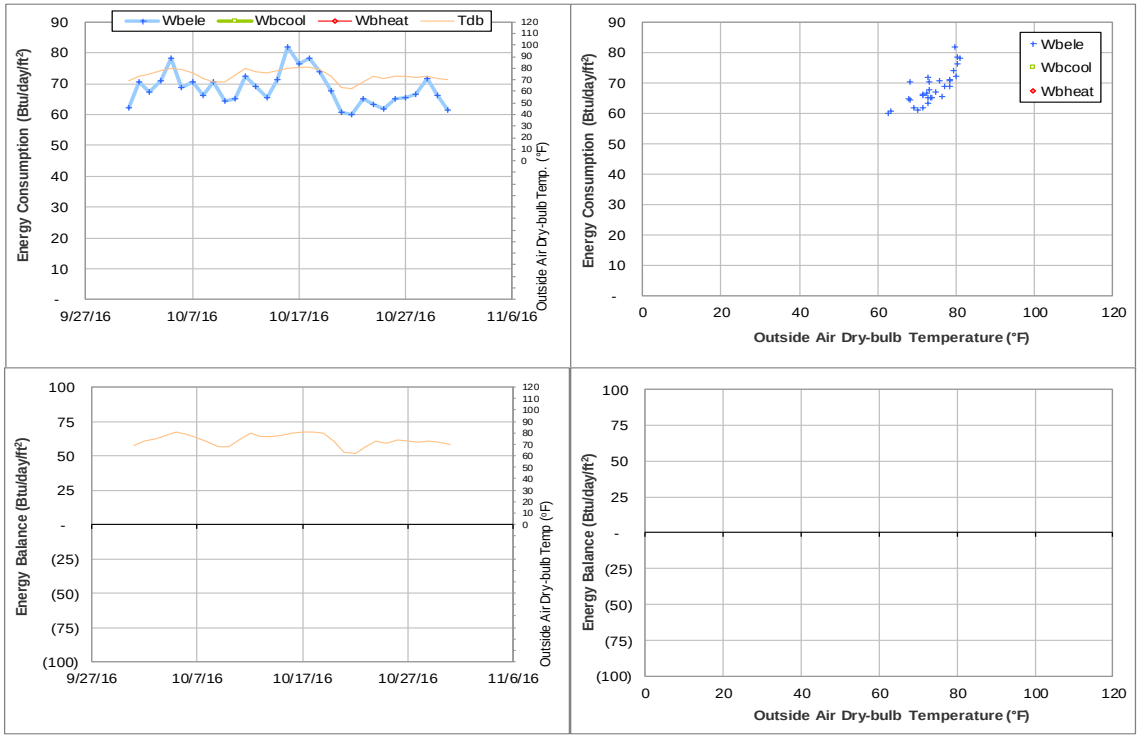


Figure IV-147 University Apartments - The Gardens Q TAMU BLDG # 1460 Energy Balance Plot during October 2016

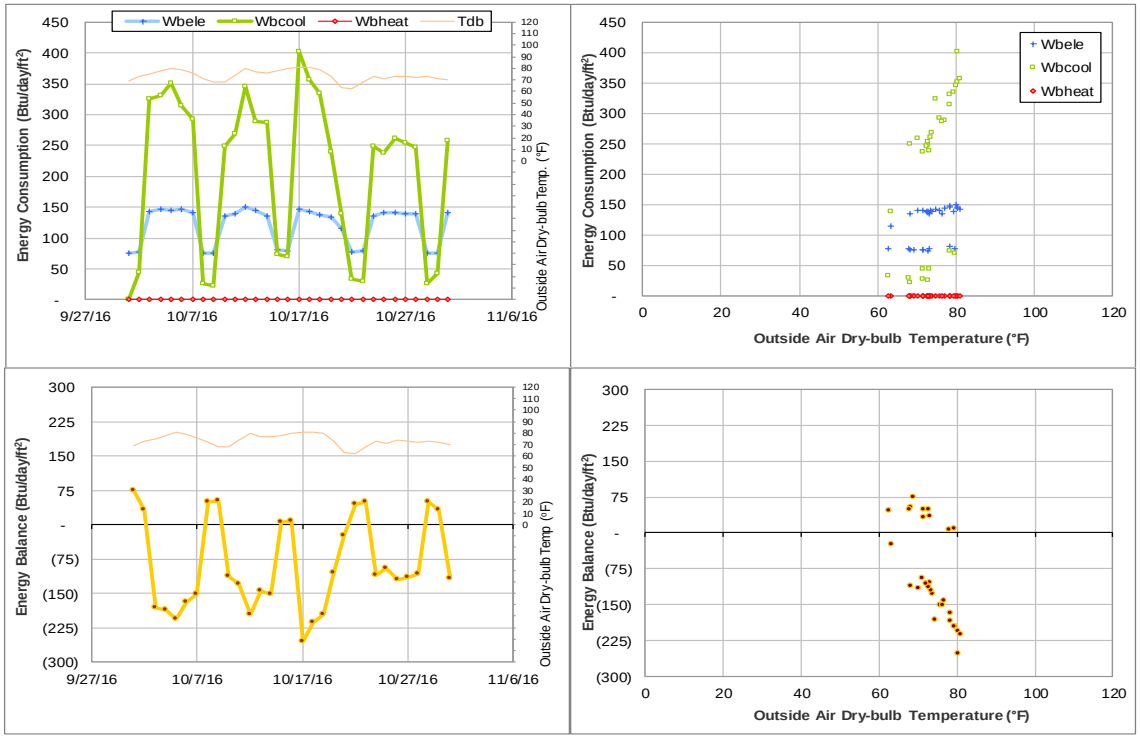


Figure IV-148 Utilities & Energy Services Business Office TAMU BLDG # 1497 Energy Balance Plot during October 2016

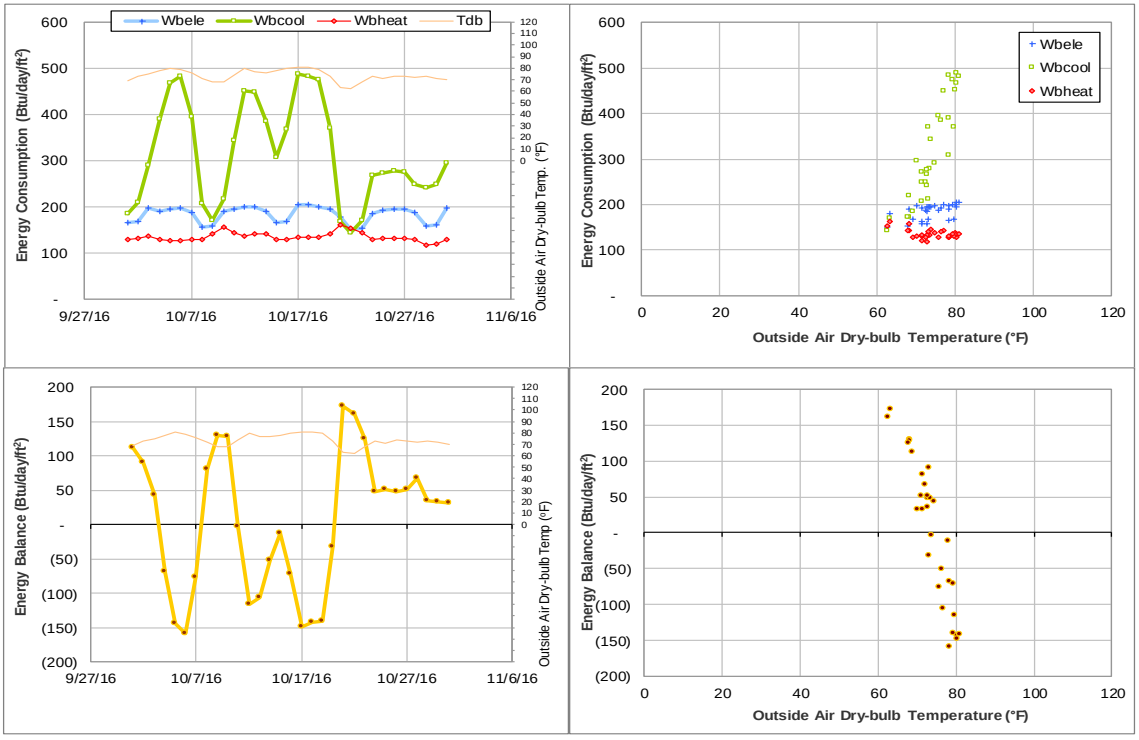


Figure IV-149 Kleberg Center TAMU BLDG # 1501 Energy Balance Plot during October 2016

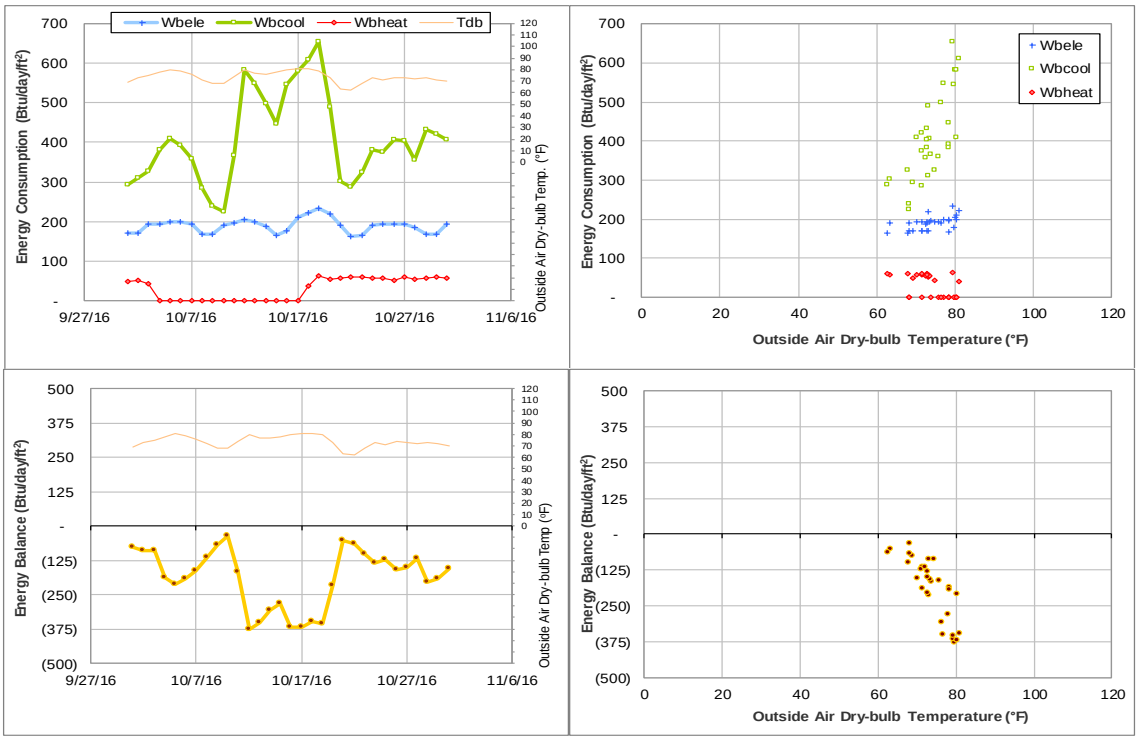


Figure IV-150 Heep Center TAMU BLDG # 1502 Energy Balance Plot during October 2016

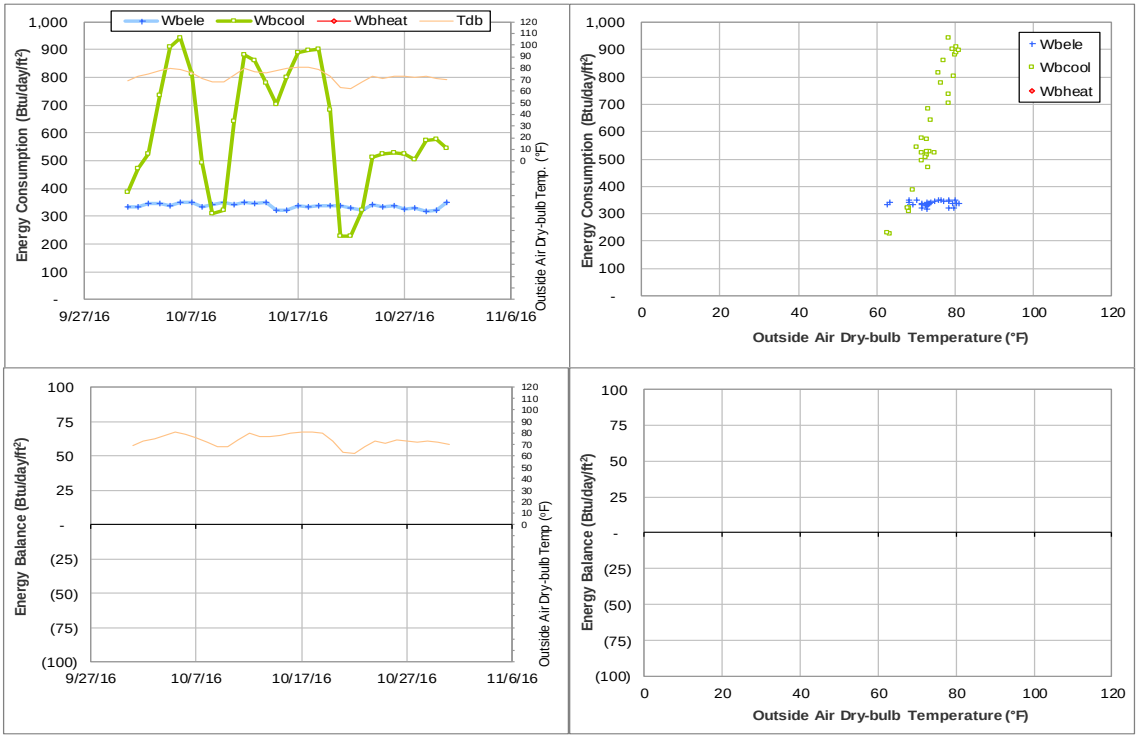


Figure IV-151 Cater-Mattil Hall TAMU BLDG # 1503 Energy Balance Plot during October 2016

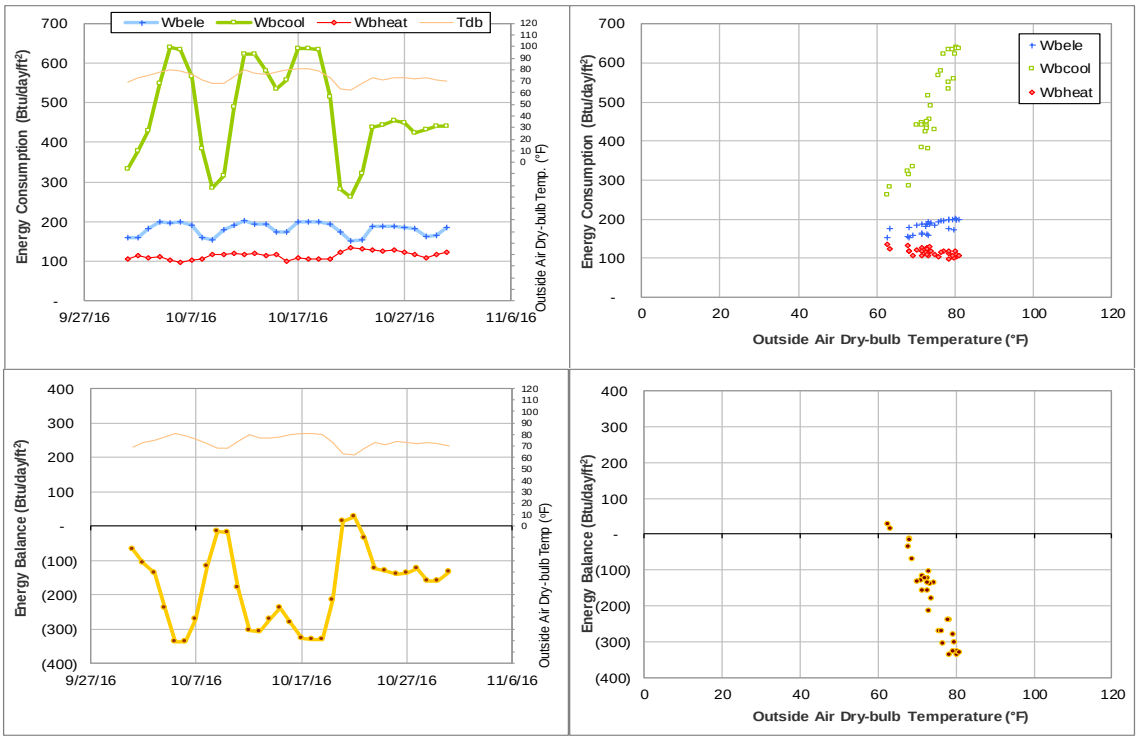


Figure IV-152 Reynolds Medical Sciences Building TAMU BLDG # 1504 Energy Balance Plot during October 2016

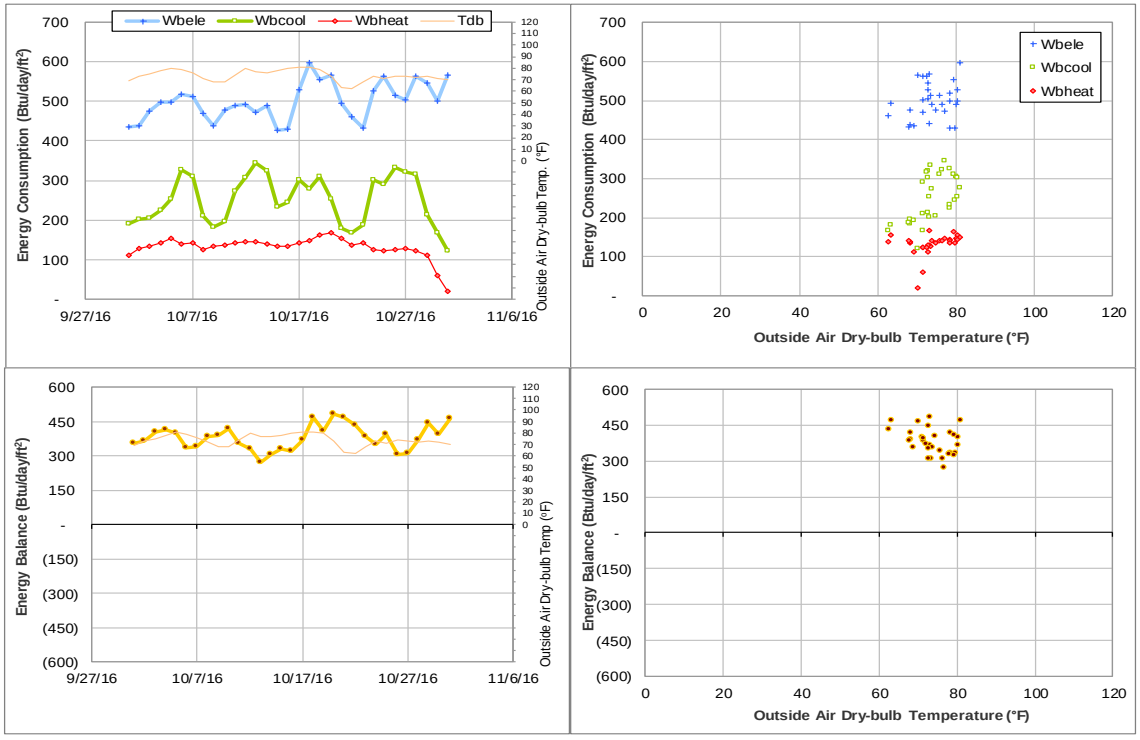


Figure IV-153 Rosenthal Meat Science & Technology Center TAMU BLDG # 1505 Energy Balance Plot during October 2016

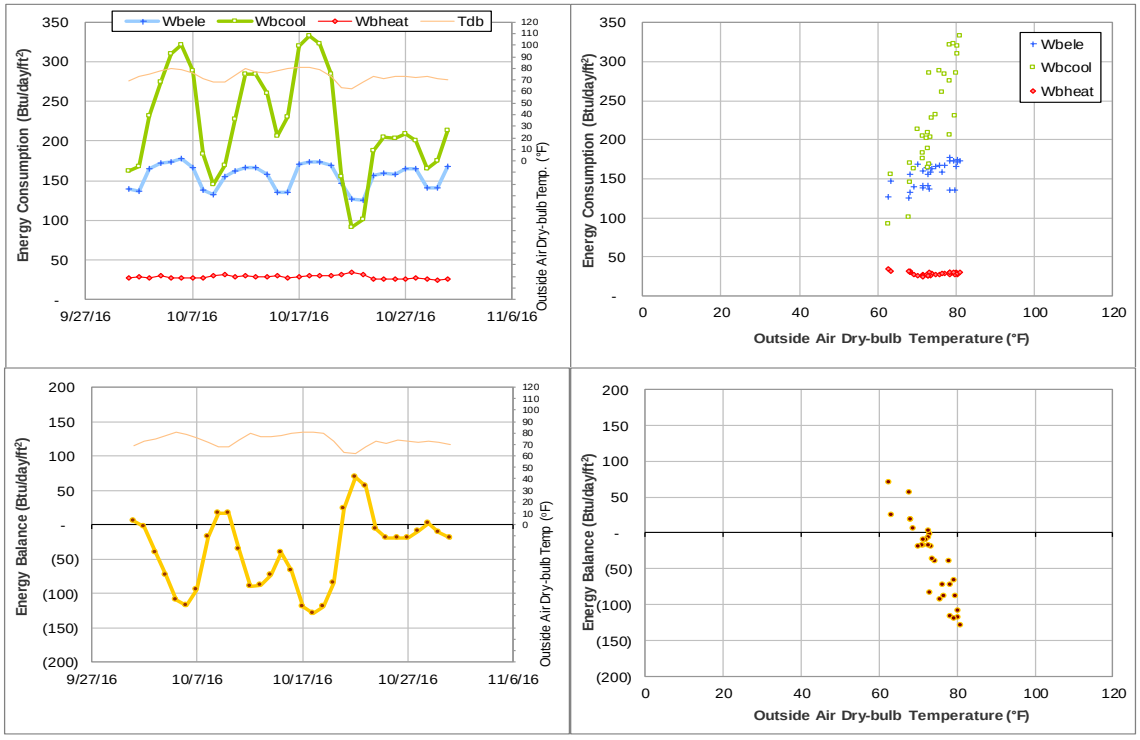


Figure IV-154 Horticulture-Forest Science Building TAMU BLDG # 1506 Energy Balance Plot during October 2016

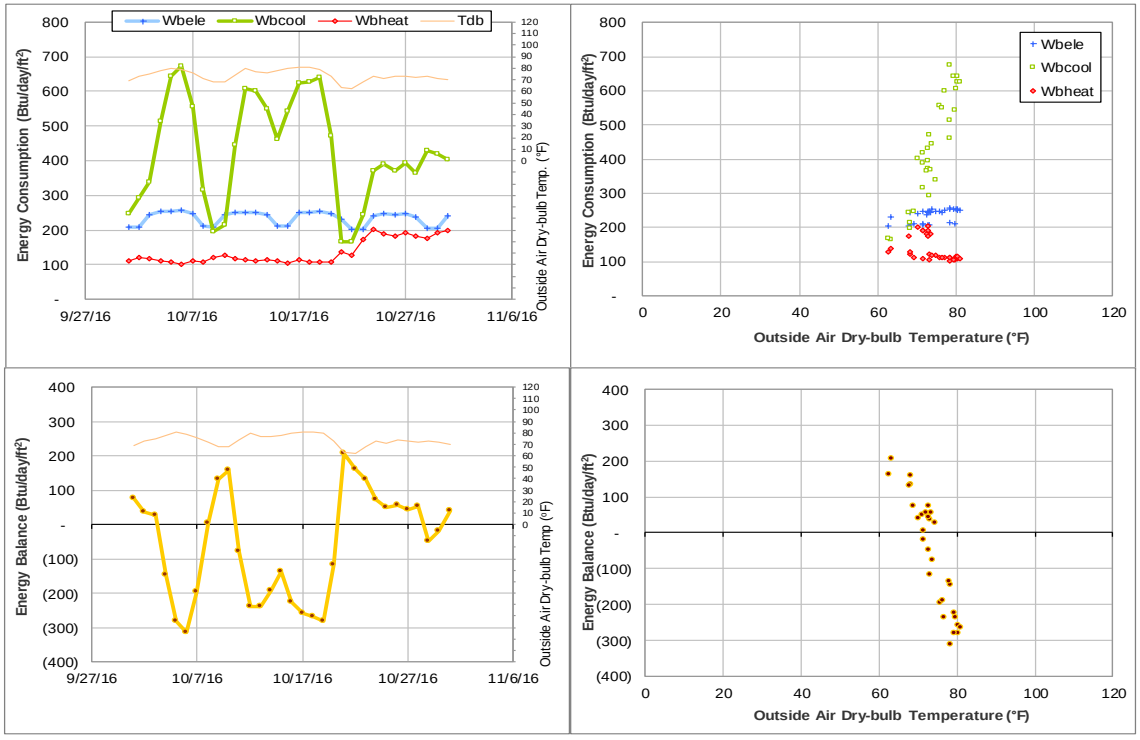


Figure IV-155 Biochemistry-Biophysics Building TAMU BLDG # 1507 Energy Balance Plot during October 2016

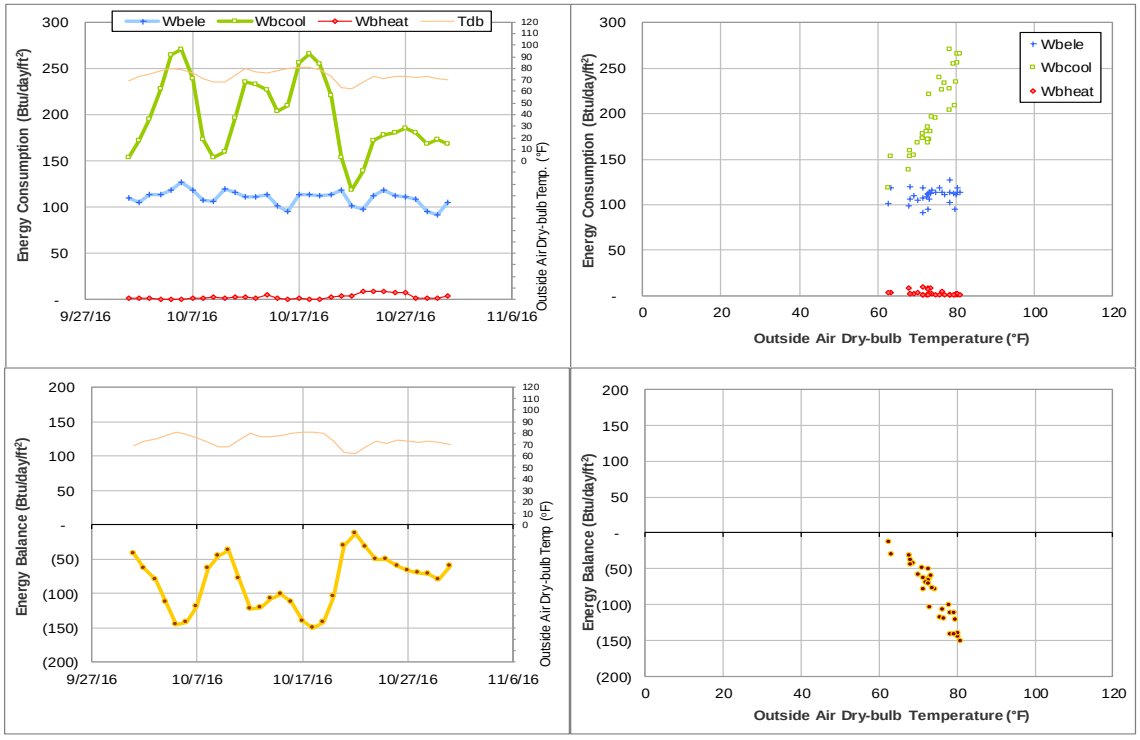


Figure IV-156 Price Hobgood Ag. Engineering Research Lab TAMU BLDG # 1508 Energy Balance Plot during October 2016

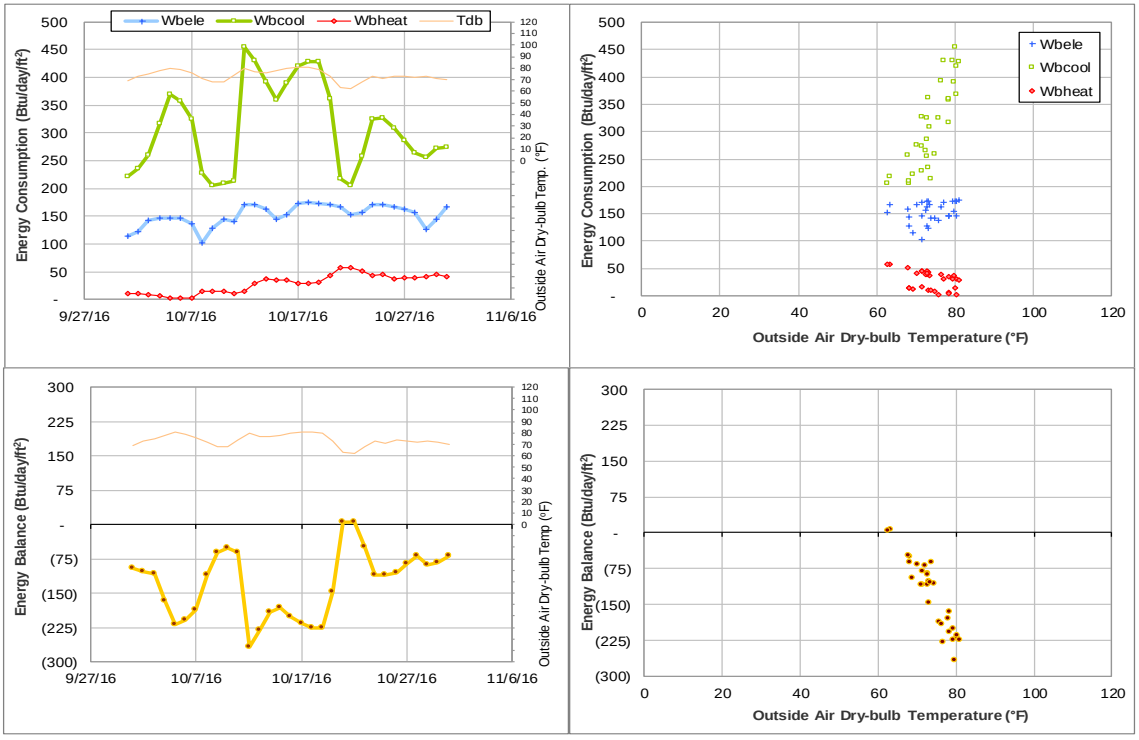


Figure IV-157 Medical Sciences Library TAMU BLDG # 1509 Energy Balance Plot during October 2016

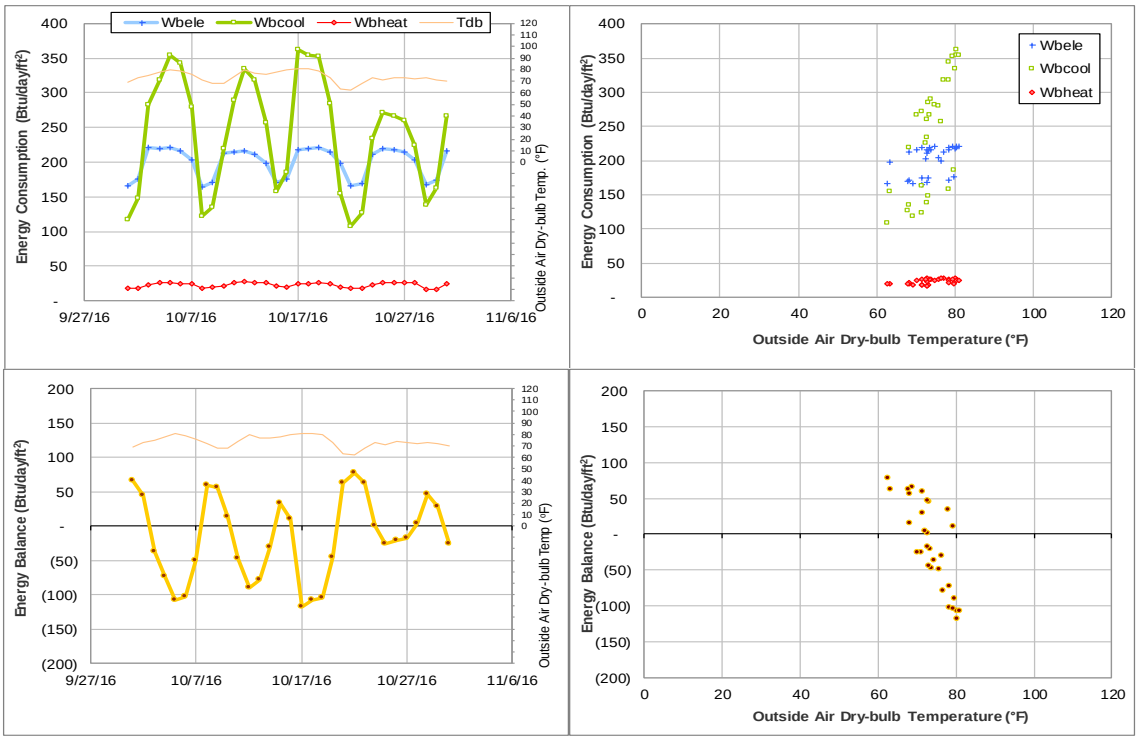


Figure IV-158 Wehner Building TAMU BLDG # 1510 Energy Balance Plot during October 2016

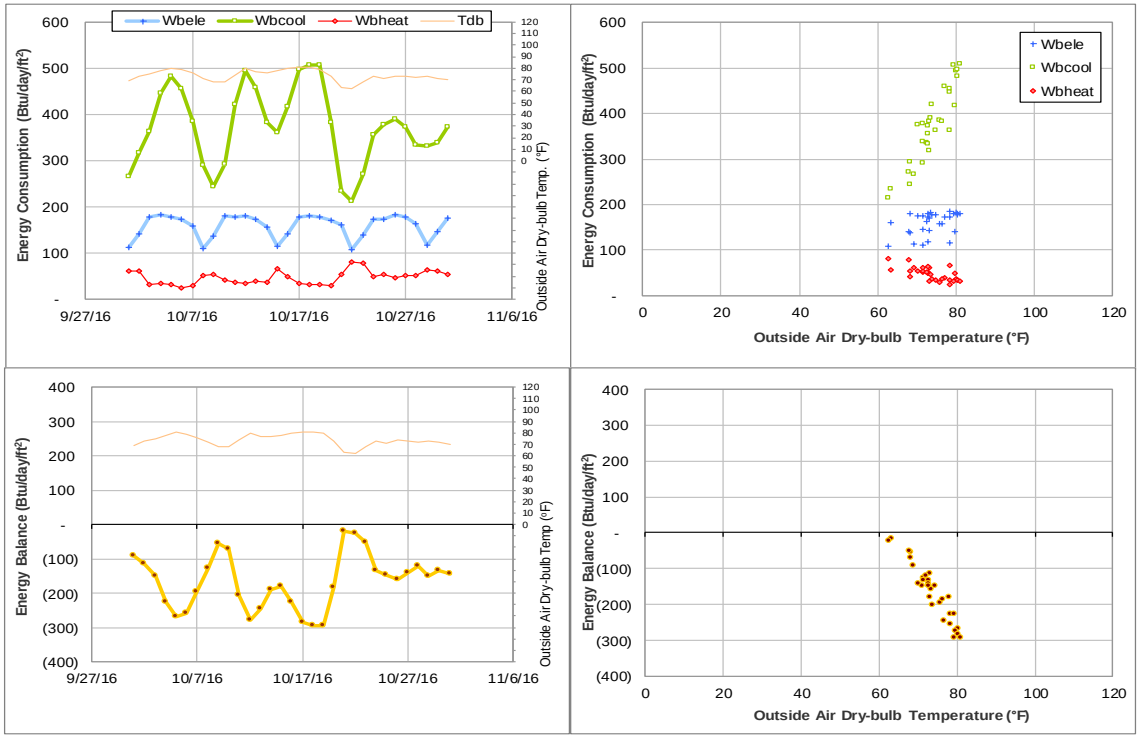


Figure IV-159 West Campus Library Facility TAMU BLDG # 1511 Energy Balance Plot during October 2016

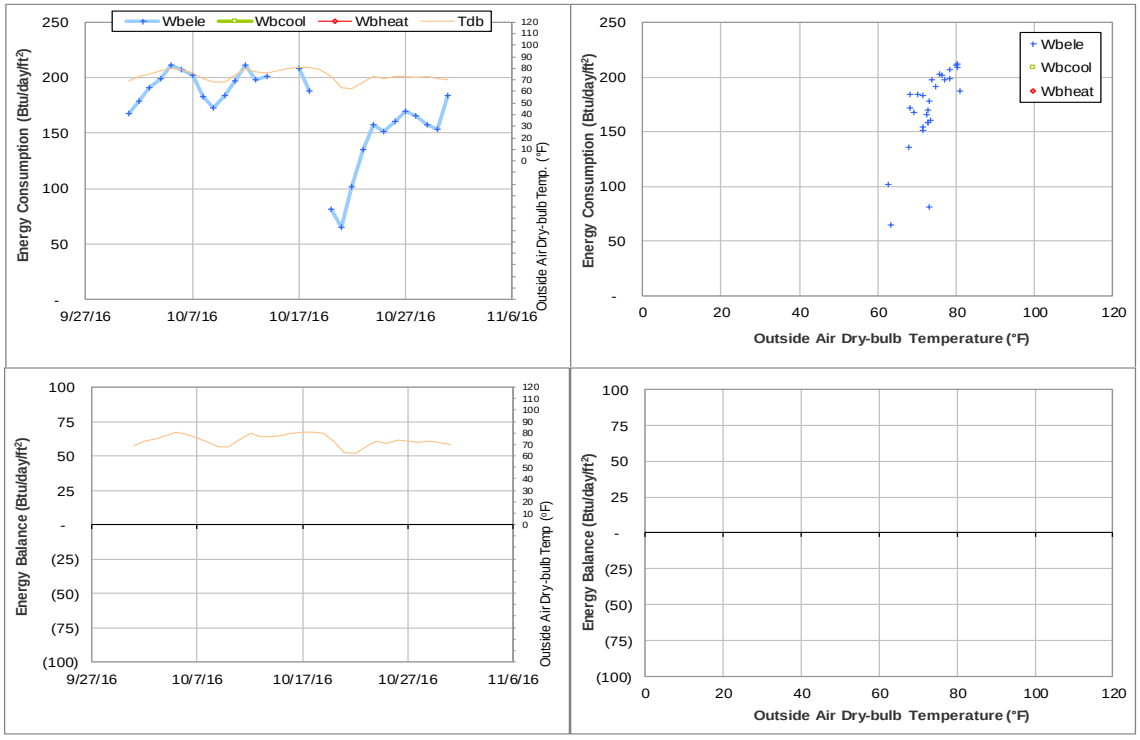


Figure IV-160 Southern Crop Improvement Greenhouse TAMU BLDG # 1512 Energy Balance Plot during October 2016

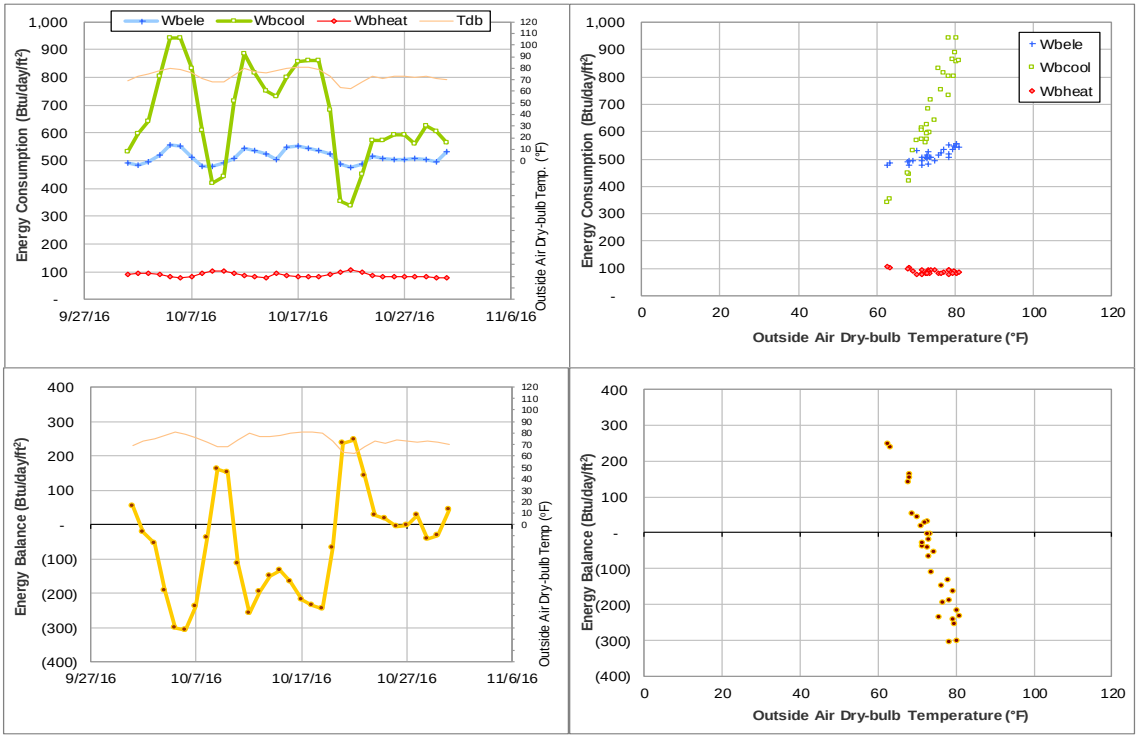


Figure IV-161 Borlaug Center for Southern Crop Improvement TAMU BLDG # 1513 Energy Balance Plot during October 2016

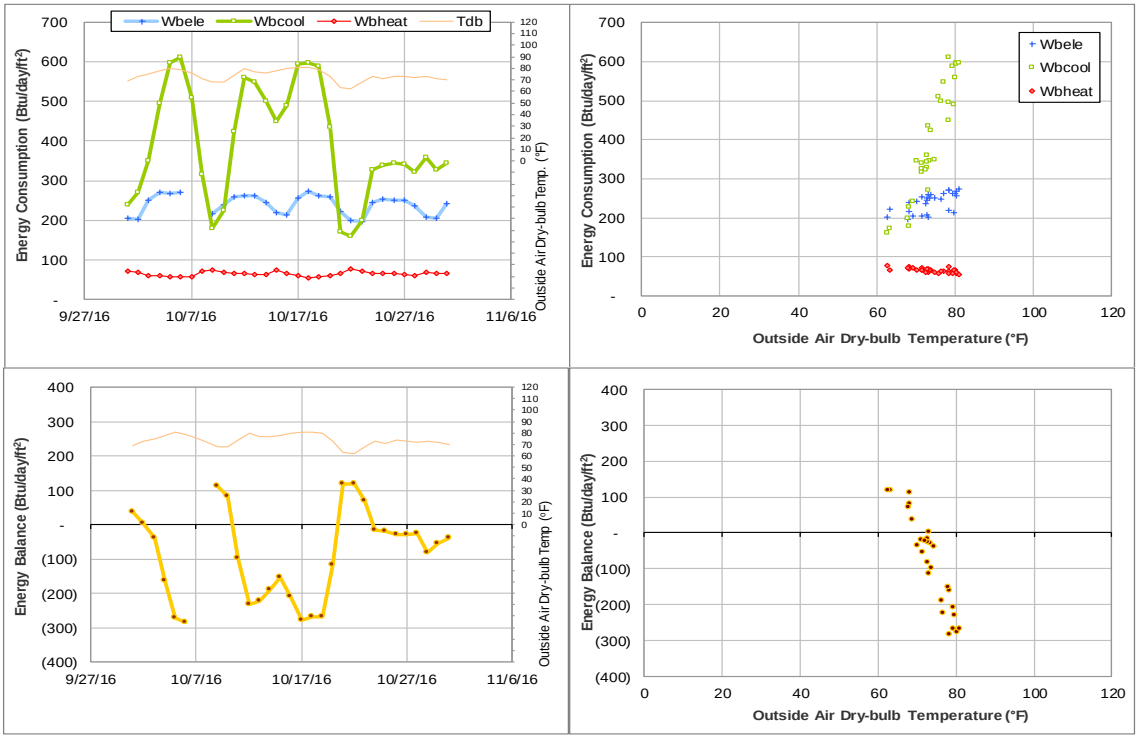


Figure IV-162 TX School of Rural Public Health TAMU BLDG # 1518 Energy Balance Plot during October 2016

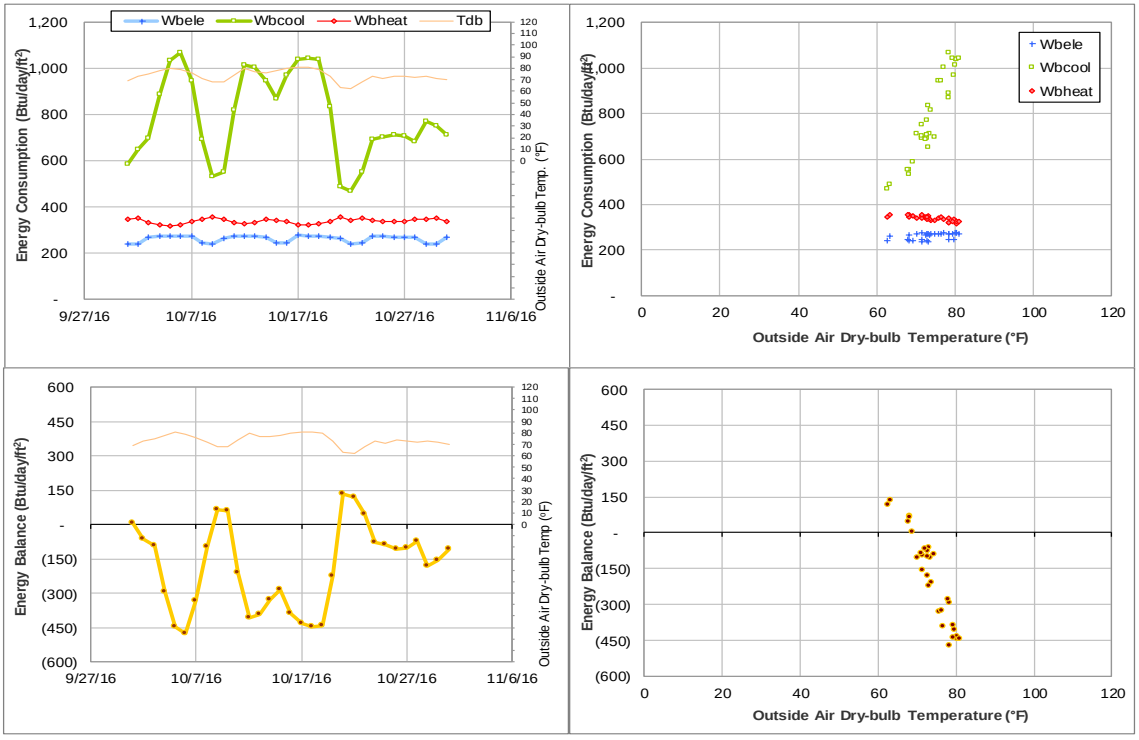


Figure IV-163 Nuclear Magnetic Resonance Facility TAMU BLDG # 1525 Energy Balance Plot during October 2016

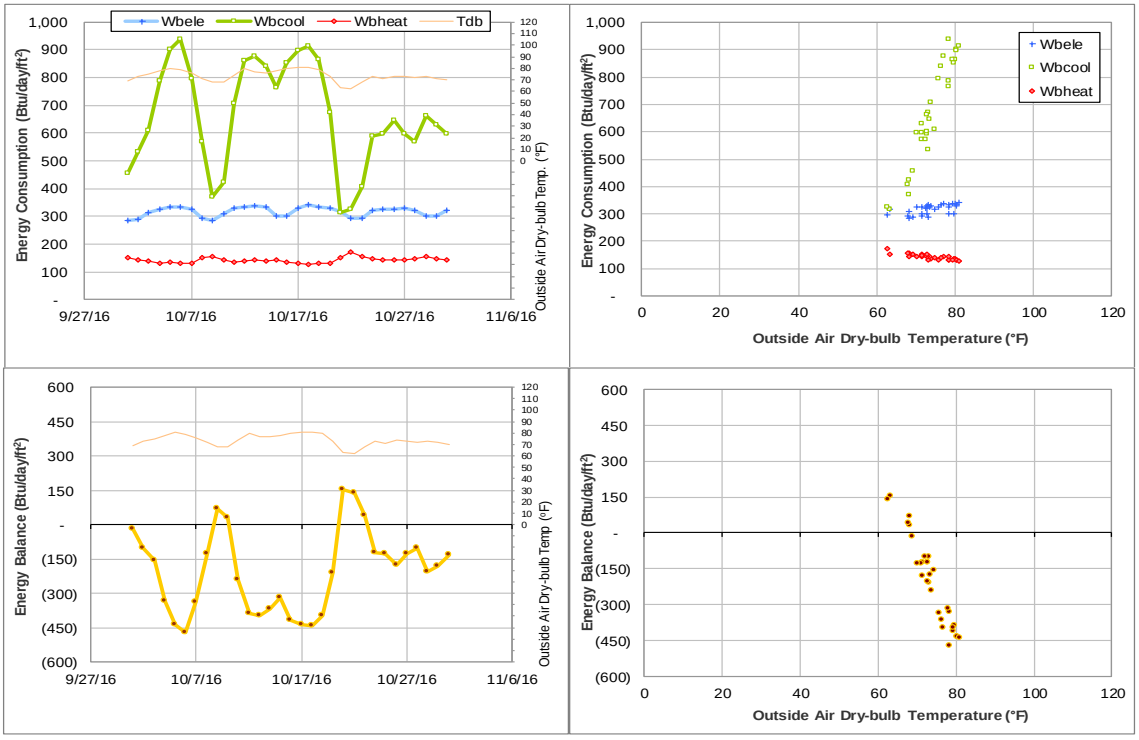


Figure IV-164 Interdisciplinary Life Sciences Building TAMU BLDG # 1530 Energy Balance Plot during October 2016

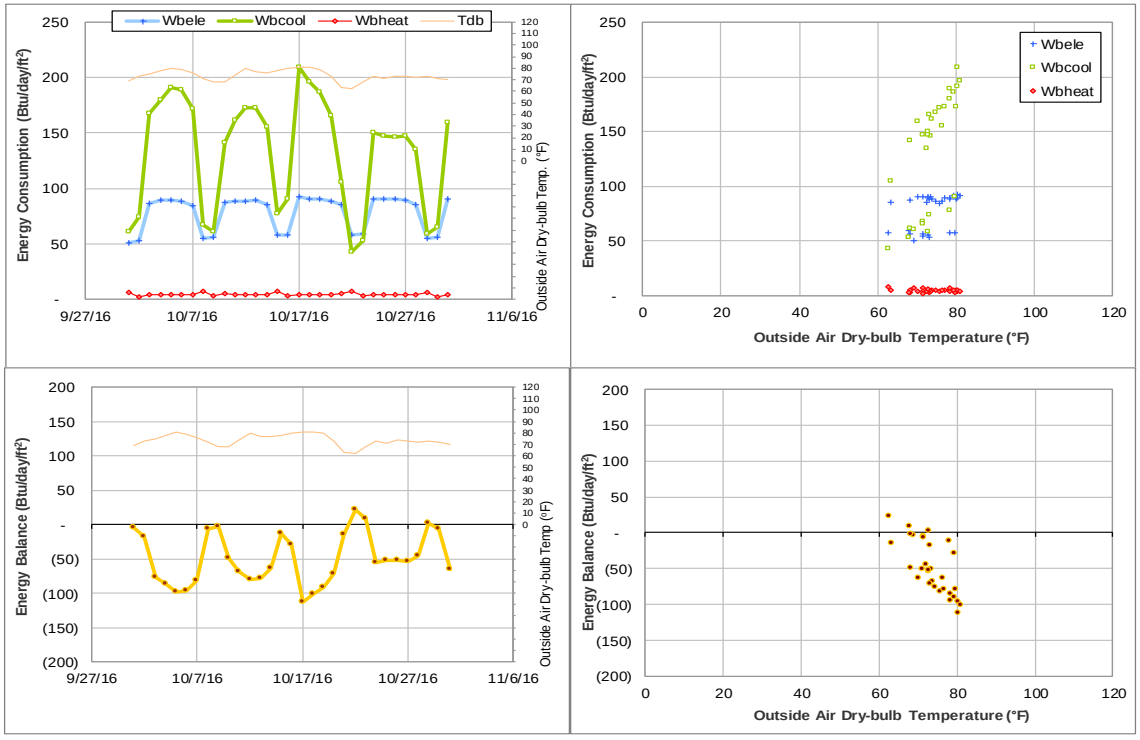


Figure IV-165 Agriculture and Life Sciences Building TAMU BLDG # 1535 Energy Balance Plot during October 2016

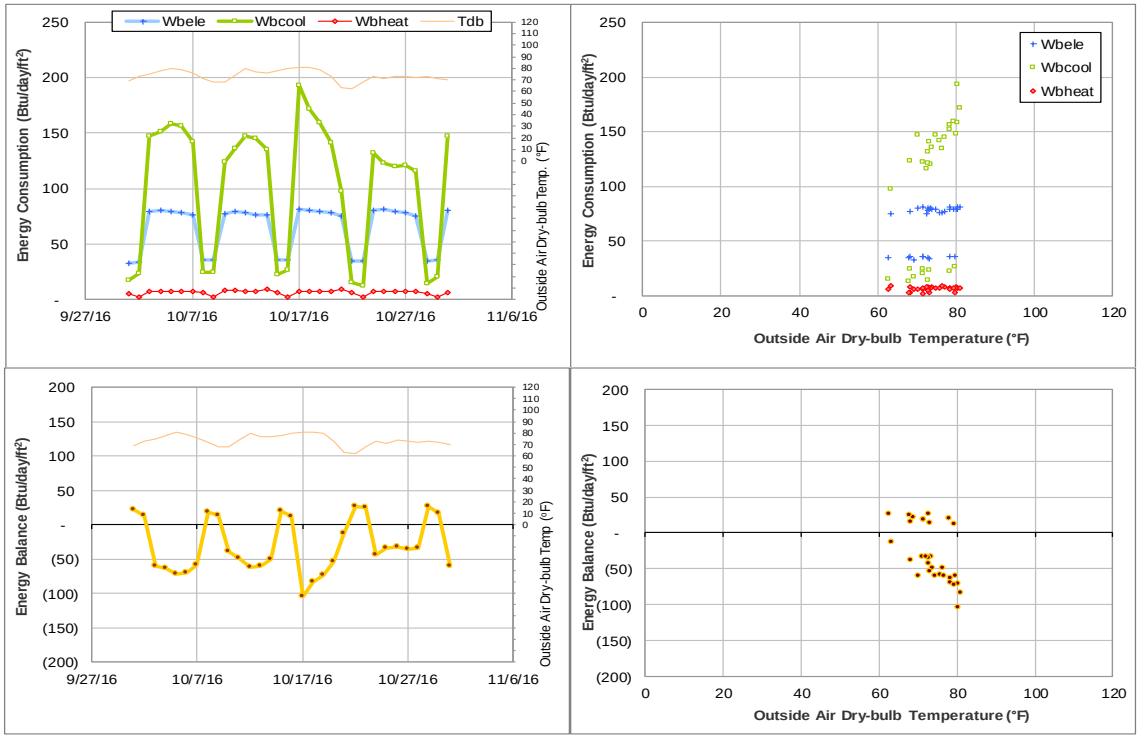


Figure IV-166 AgriLife Services Building TAMU BLDG # 1536 Energy Balance Plot during October 2016

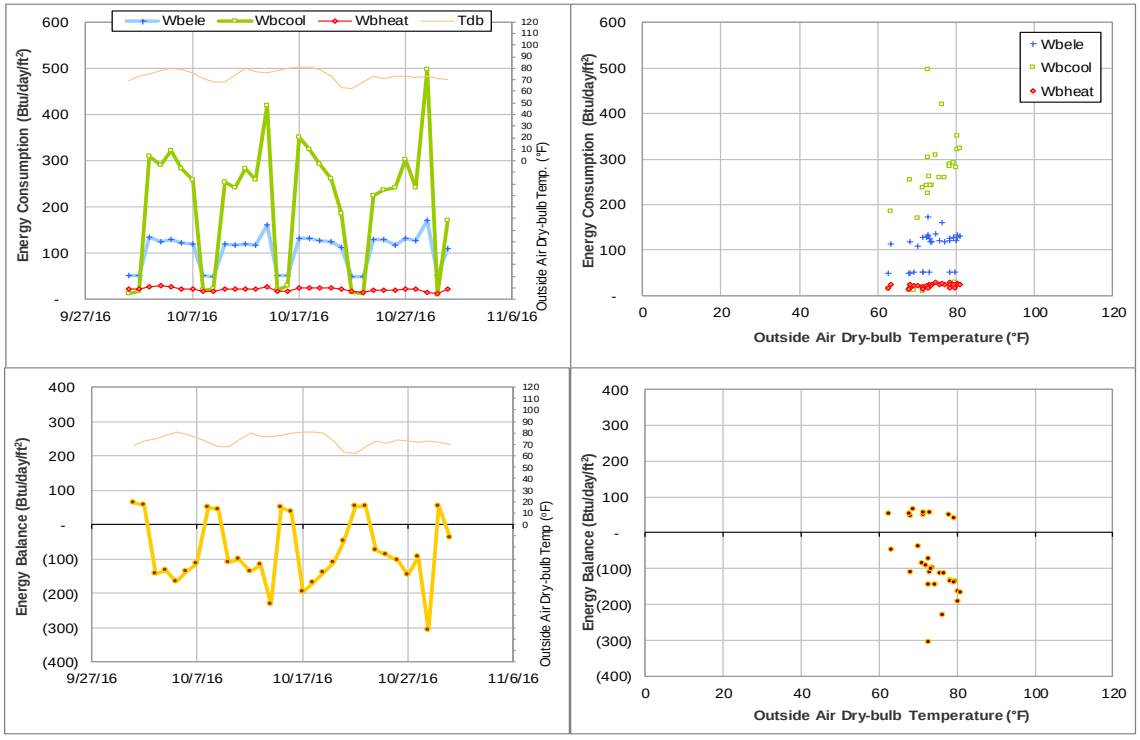


Figure IV-167 Agriculture Program Visitors Center TAMU BLDG # 1538 Energy Balance Plot during October 2016

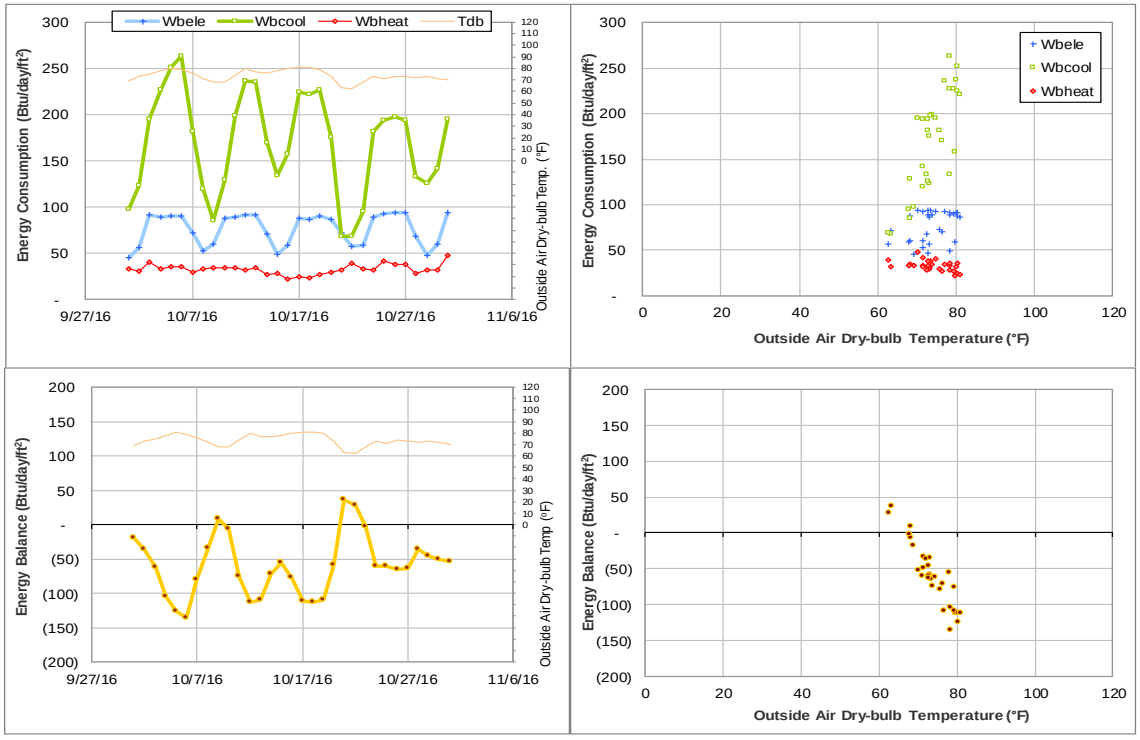


Figure IV-168 Physical Education Activity Program Building TAMU BLDG # 1540 Energy Balance Plot during October 2016

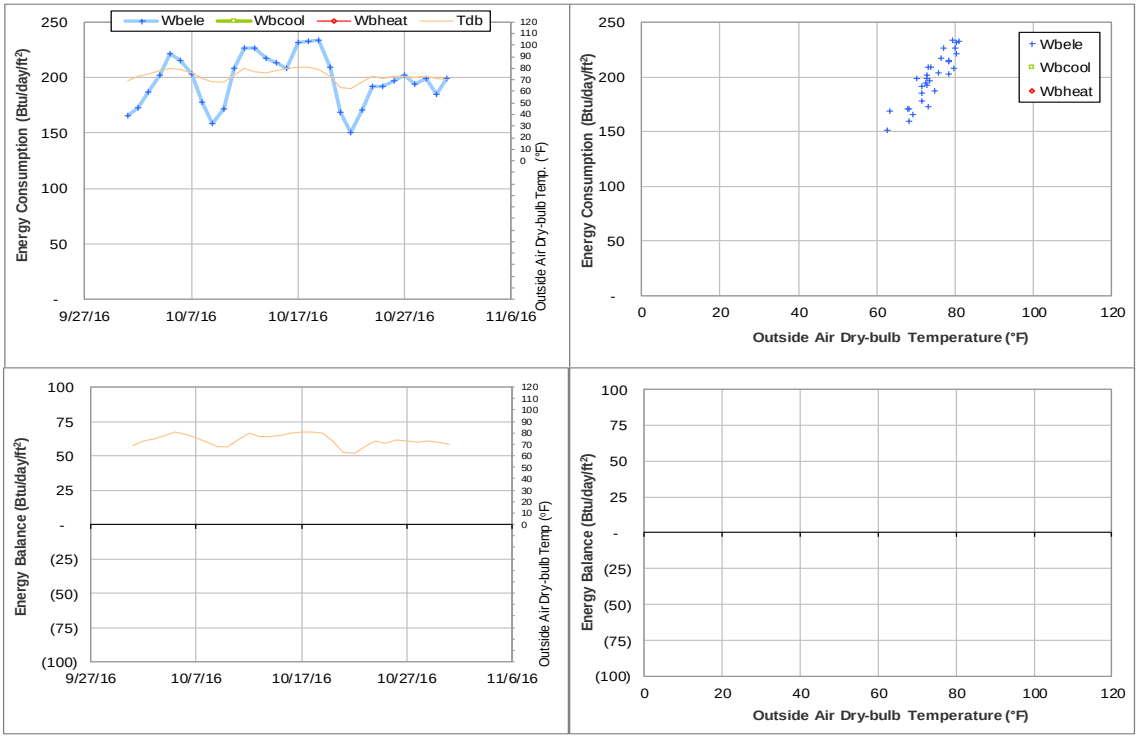


Figure IV-169 Olsen Field at Bluebell Park TAMU BLDG # 1550 Energy Balance Plot during October 2016

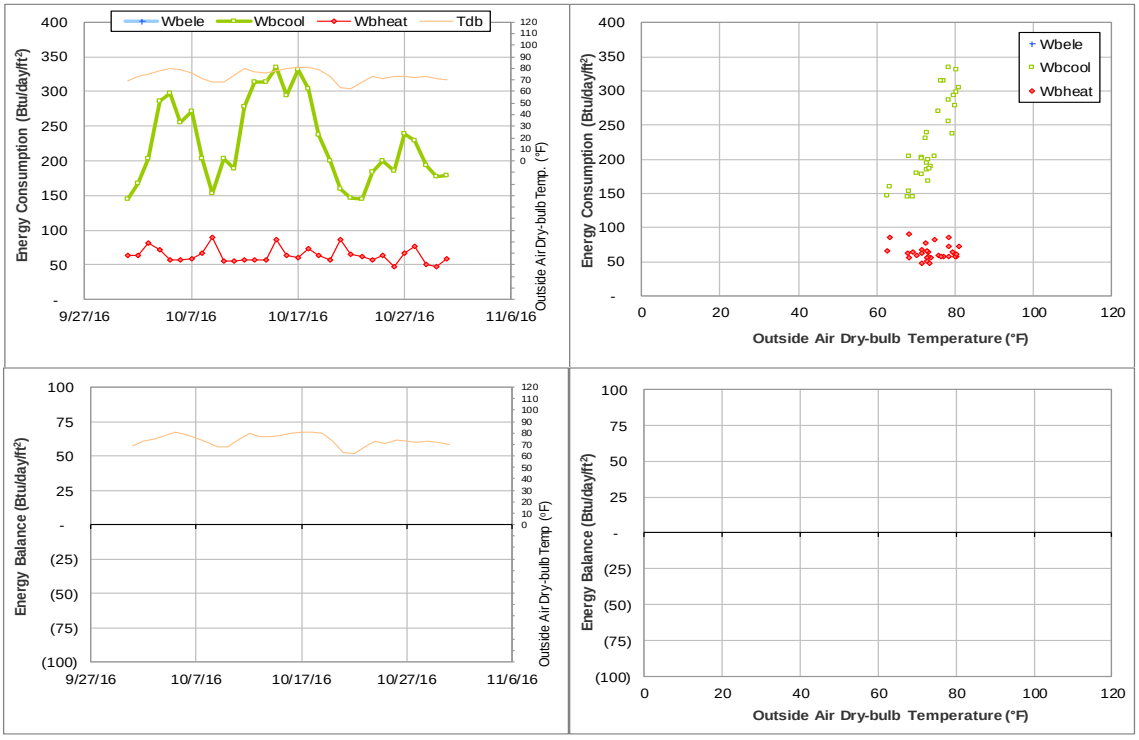


Figure IV-170 Reed Arena and Cox-McFerrin Center TAMU BLDG # 1554, #1558 Energy Balance Plot during October 2016

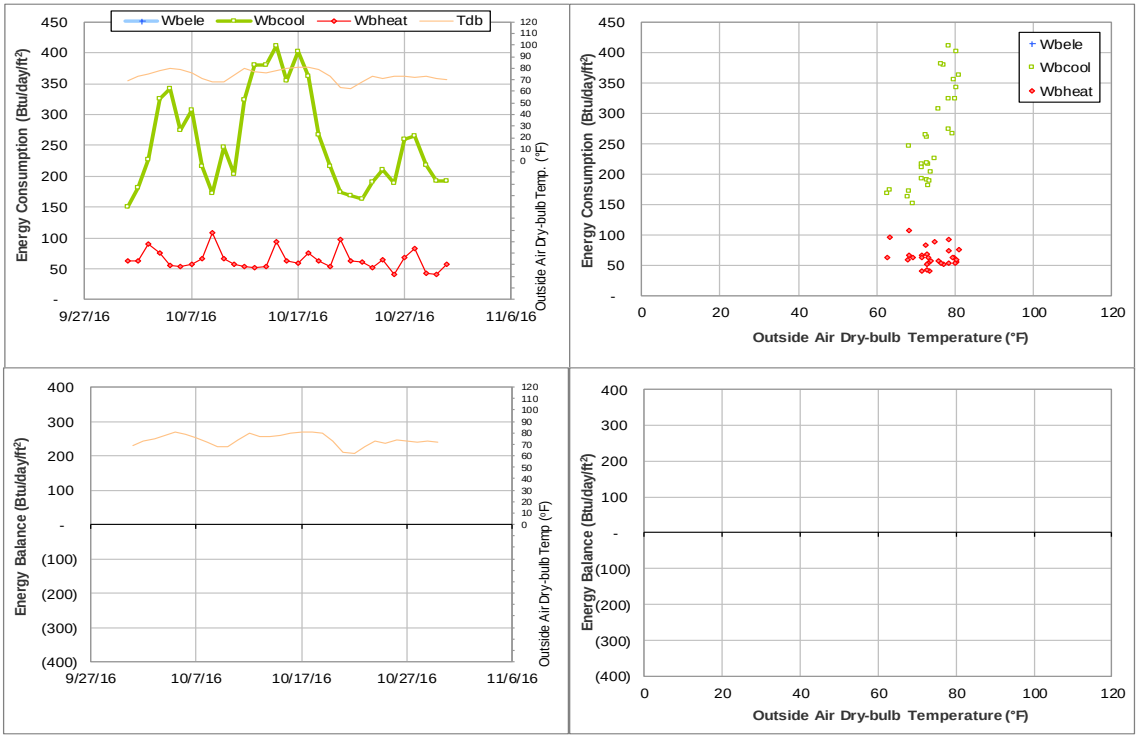


Figure IV-171 Reed Arena TAMU BLDG # 1554 Energy Balance Plot during October 2016

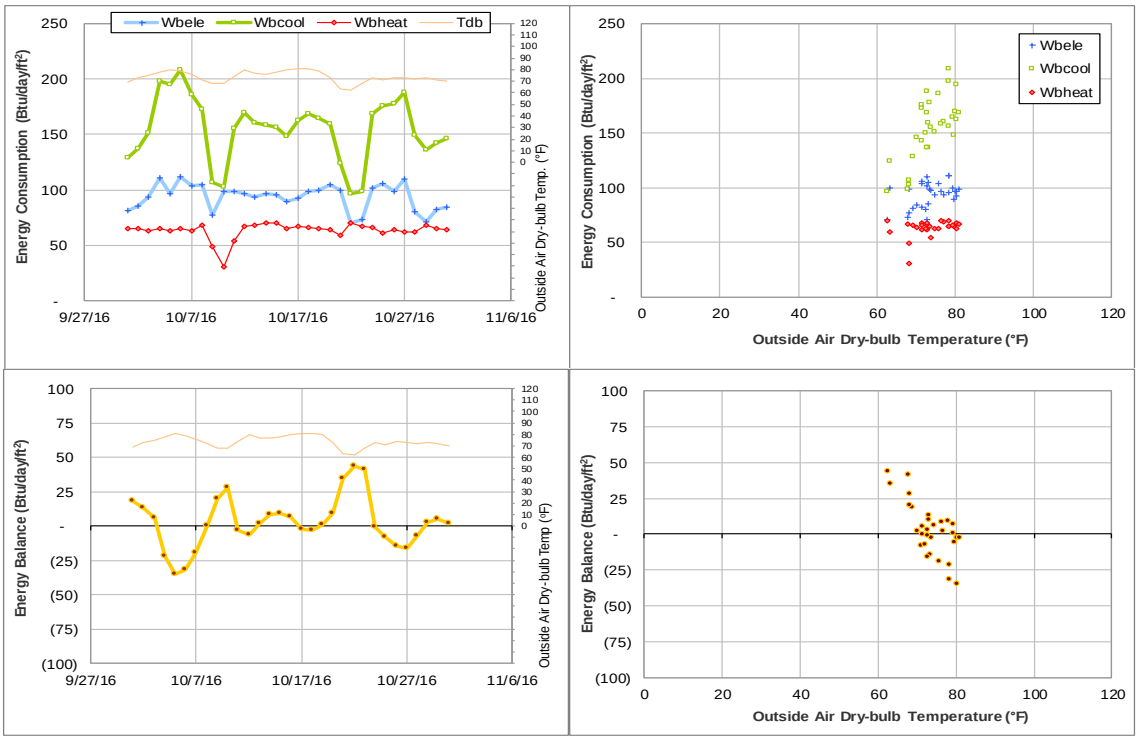


Figure IV-172 Cox-McFerrin Center for Aggie Basketball TAMU BLDG # 1558 Energy Balance Plot during October 2016

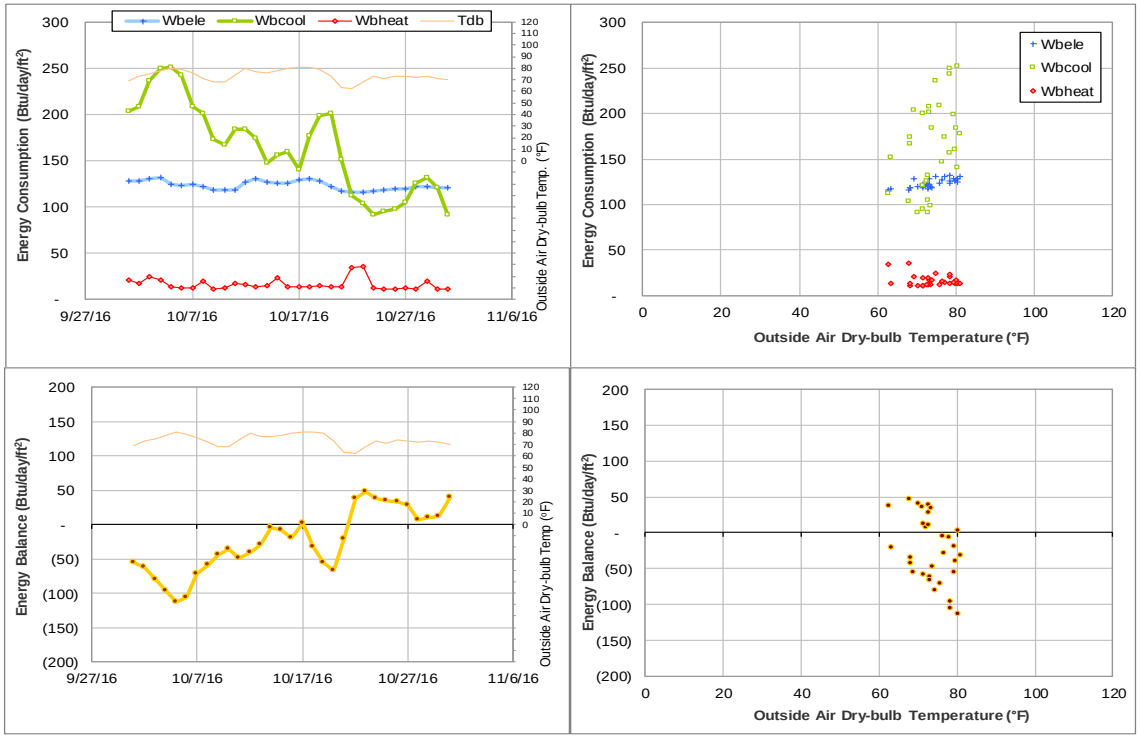


Figure IV-173 West Campus Parking Garage TAMU BLDG # 1559 Energy Balance Plot during October 2016

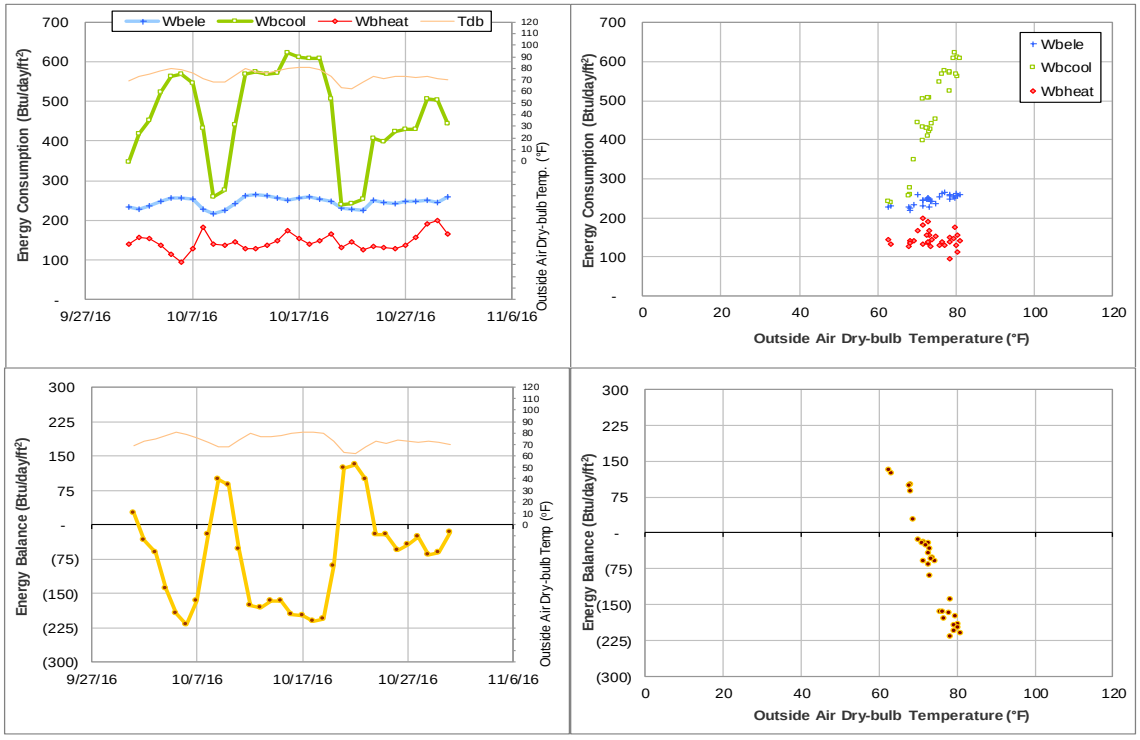


Figure IV-174 Student Recreation Center TAMU BLDG # 1560 Energy Balance Plot during October 2016

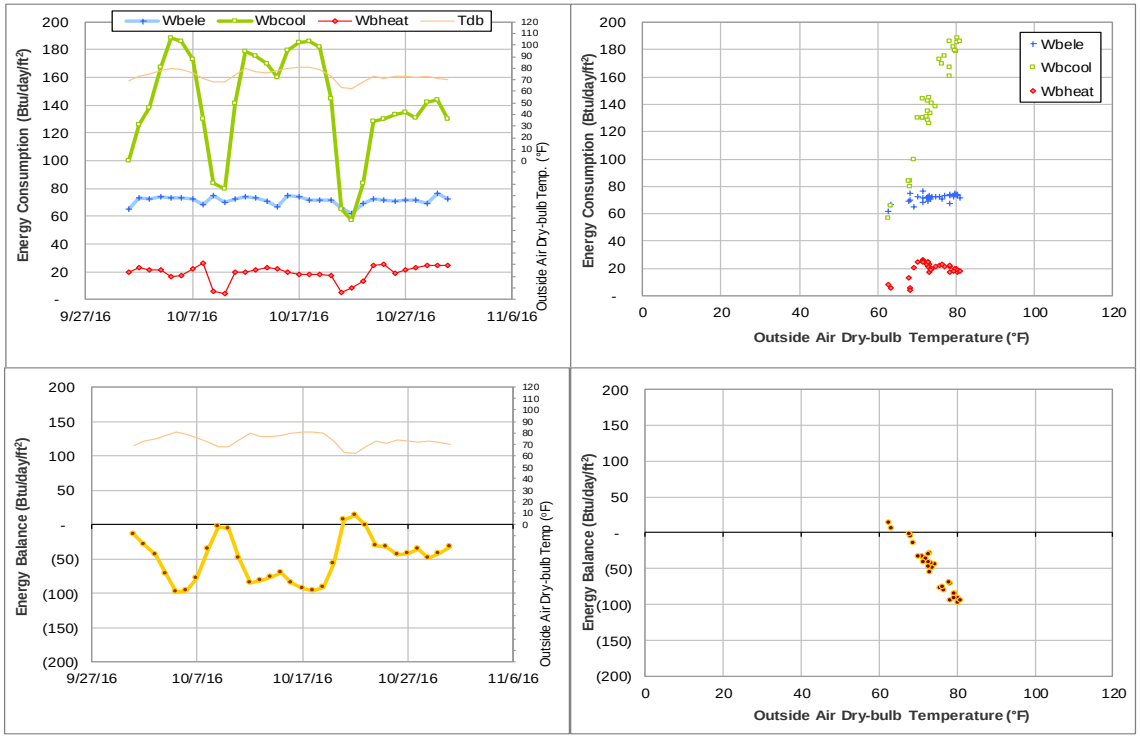


Figure IV-175 White Creek Apartment 1 and White Creek Apts Activity Center TAMU BLDG # 1589 Energy Balance Plot during October 2016

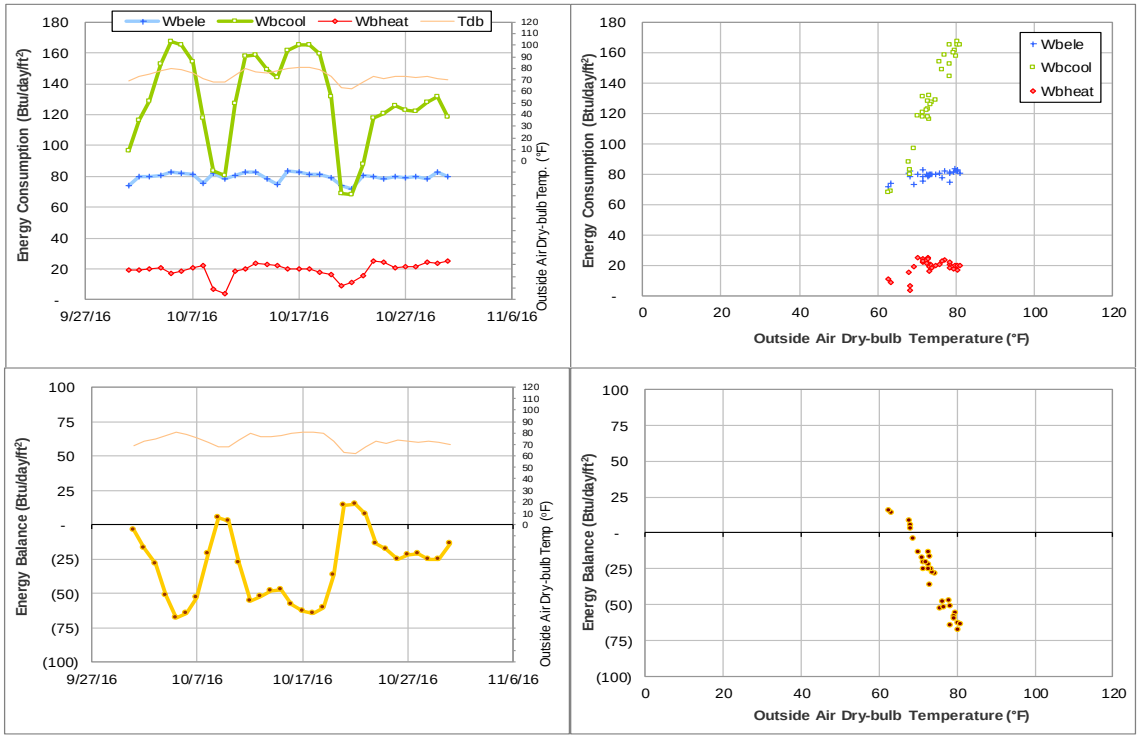


Figure IV-176 White Creek Apartment 2 TAMU BLDG # 1591 Energy Balance Plot during October 2016

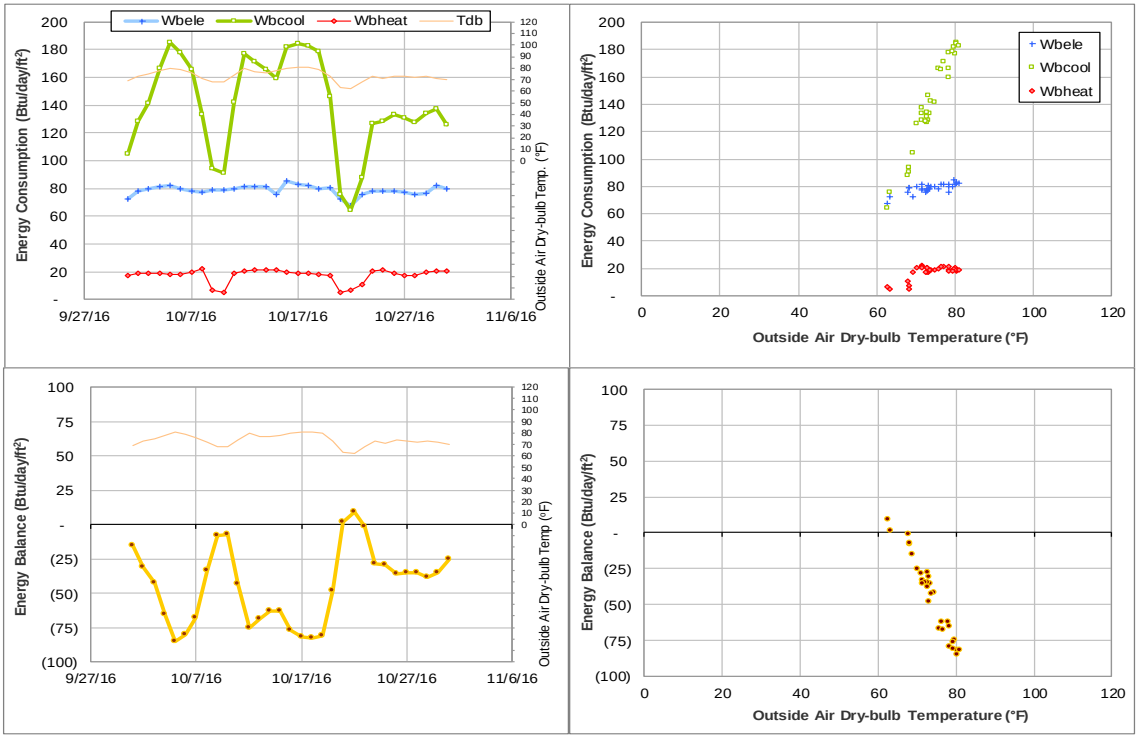


Figure IV-177 White Creek Apartment 3 TAMU BLDG # 1592 Energy Balance Plot during October 2016

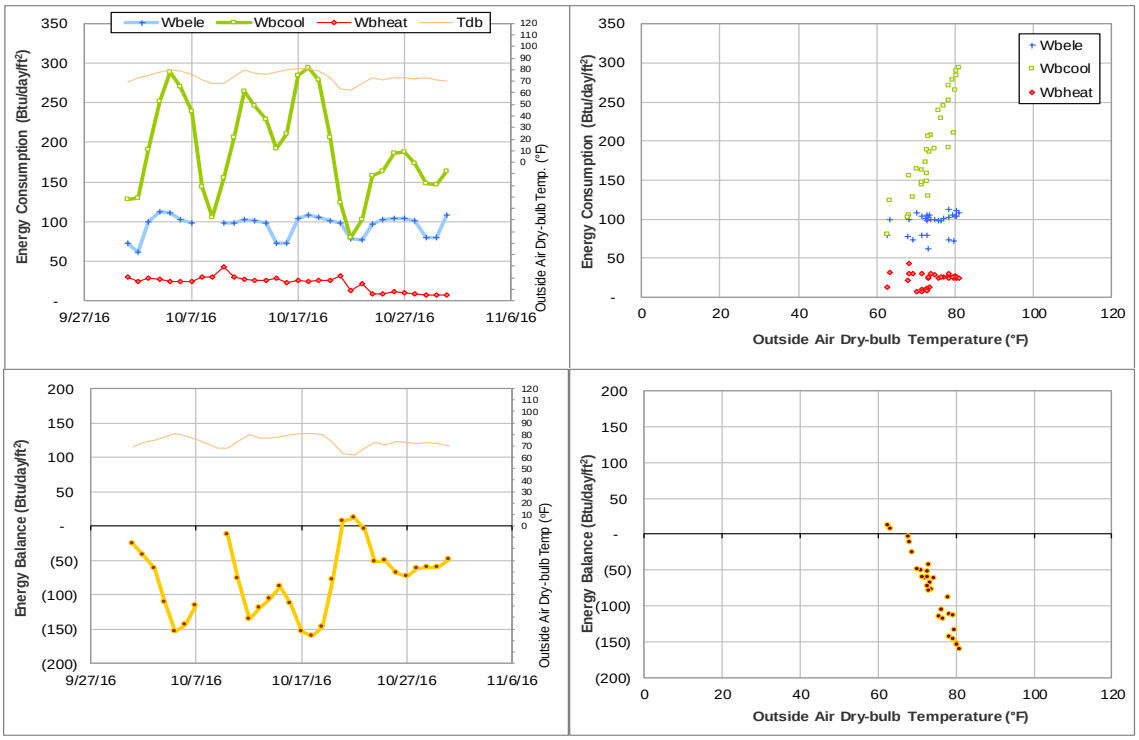


Figure IV-178 Gilchrist TTI Building TAMU BLDG # 1600 Energy Balance Plot during October 2016

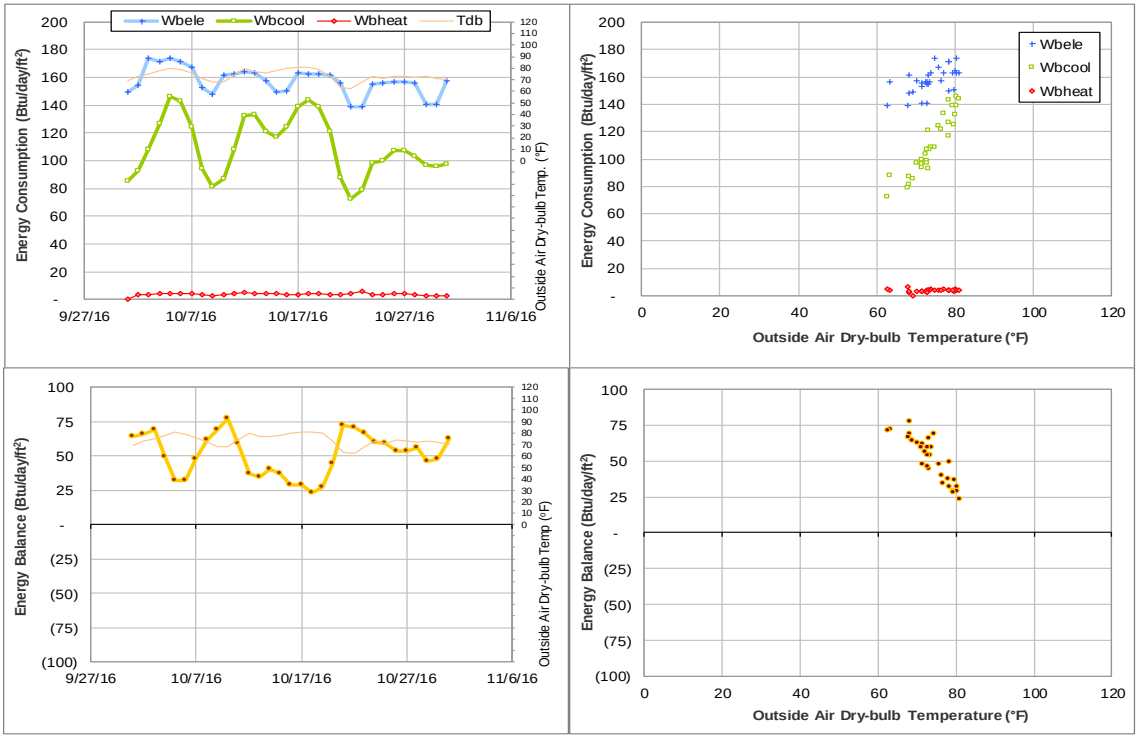


Figure IV-179 International Ocean Discovery Building TAMU BLDG # 1601 Energy Balance Plot during October 2016

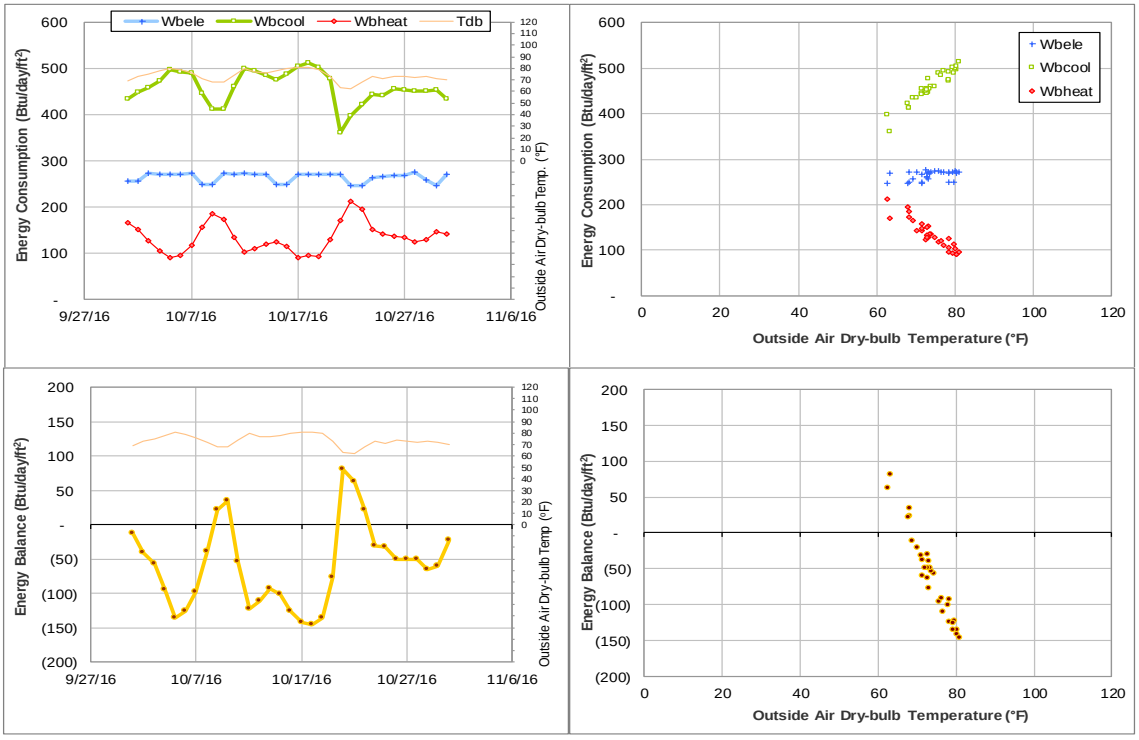


Figure IV-180 Offshore Technology Research Center TAMU BLDG # 1604 Energy Balance Plot during October 2016

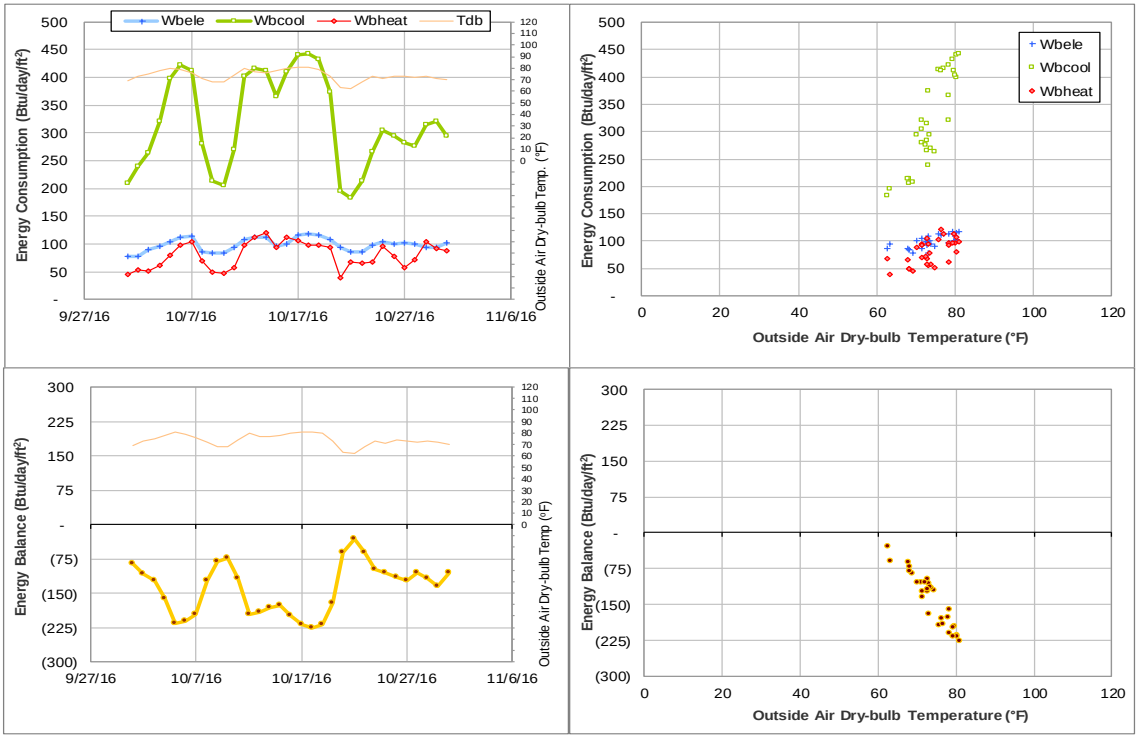


Figure IV-181 George Bush Presidential Library & Museum TAMU BLDG # 1606 Energy Balance Plot during October 2016

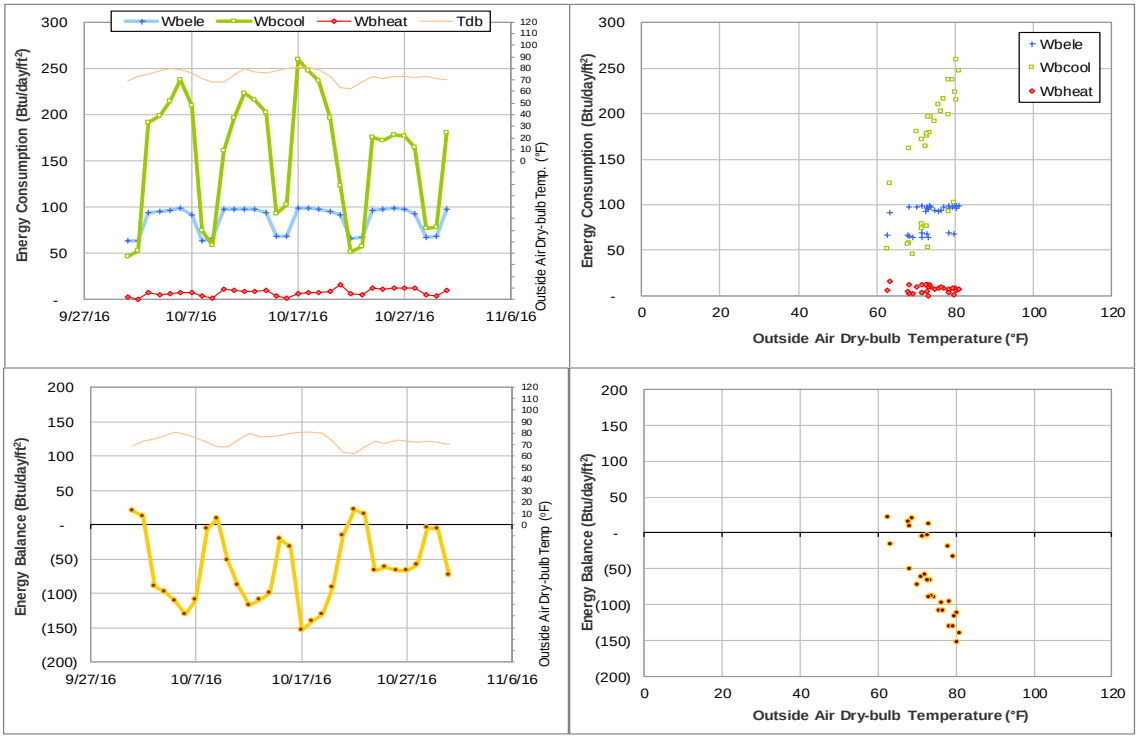


Figure IV-182 Allen Building TAMU BLDG # 1607 Energy Balance Plot during October 2016

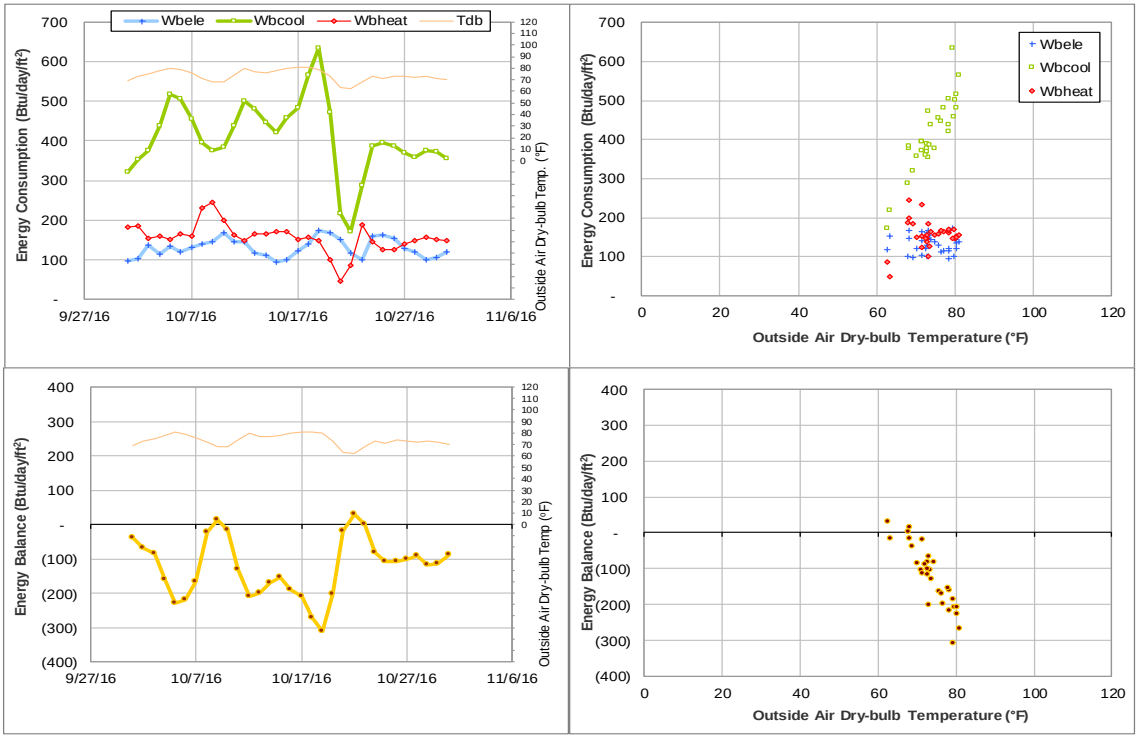


Figure IV-183 Annenberg Presidential Conference Center TAMU BLDG # 1608 Energy Balance Plot during October 2016

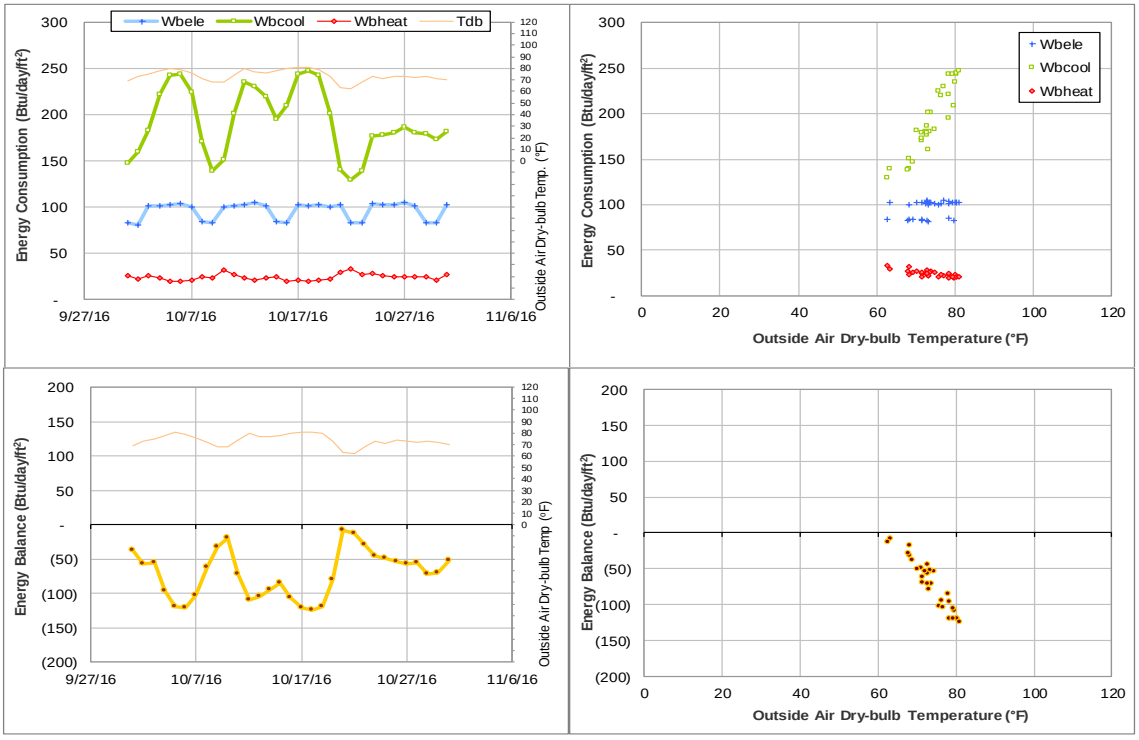


Figure IV-184 TTI Headquarters TAMU BLDG # 1609 Energy Balance Plot during October 2016

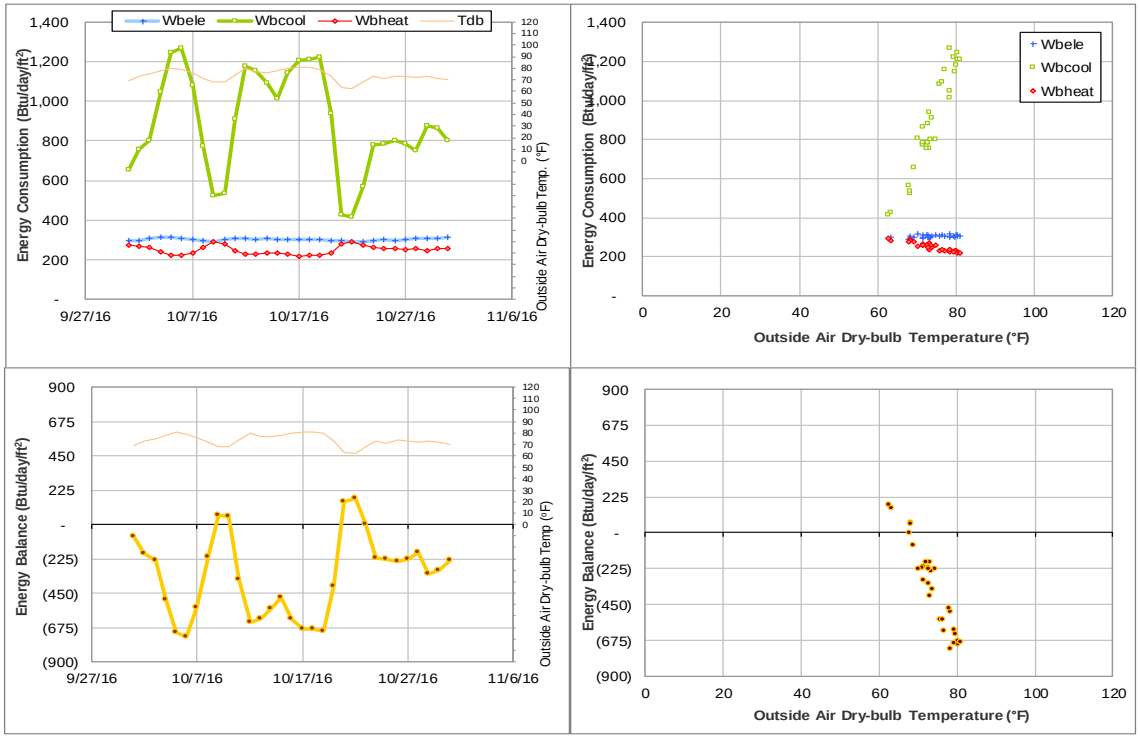


Figure IV-185 Engineering Research Building TAMU BLDG # 1611 Energy Balance Plot during October 2016

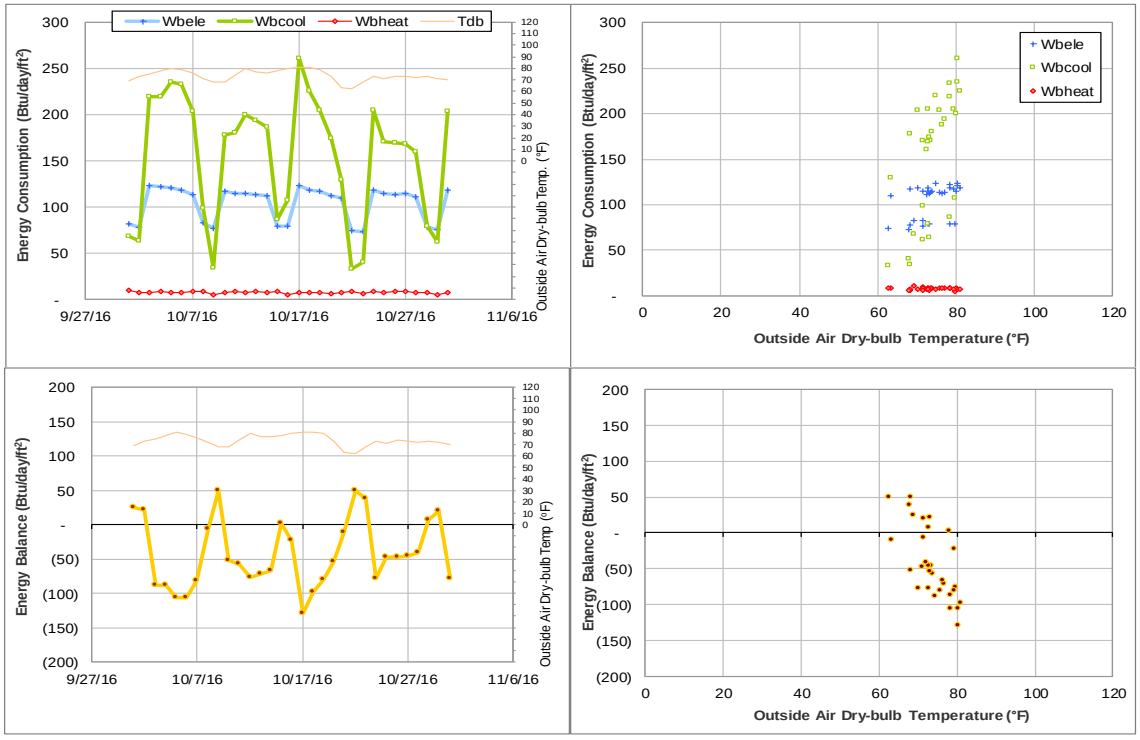


Figure IV-186 General Services Complex TAMU BLDG # 1800 Energy Balance Plot during October 2016

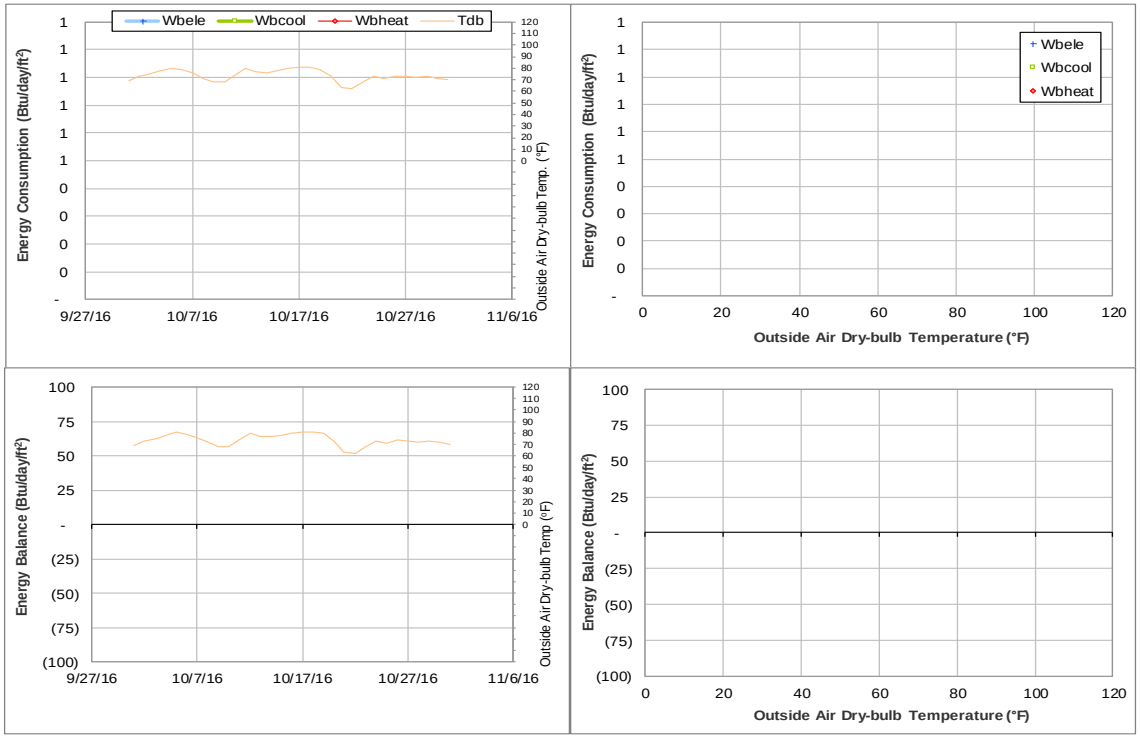


Figure IV-187 New TVMDL TAMU BLDG # 1809 Energy Balance Plot during October 2016

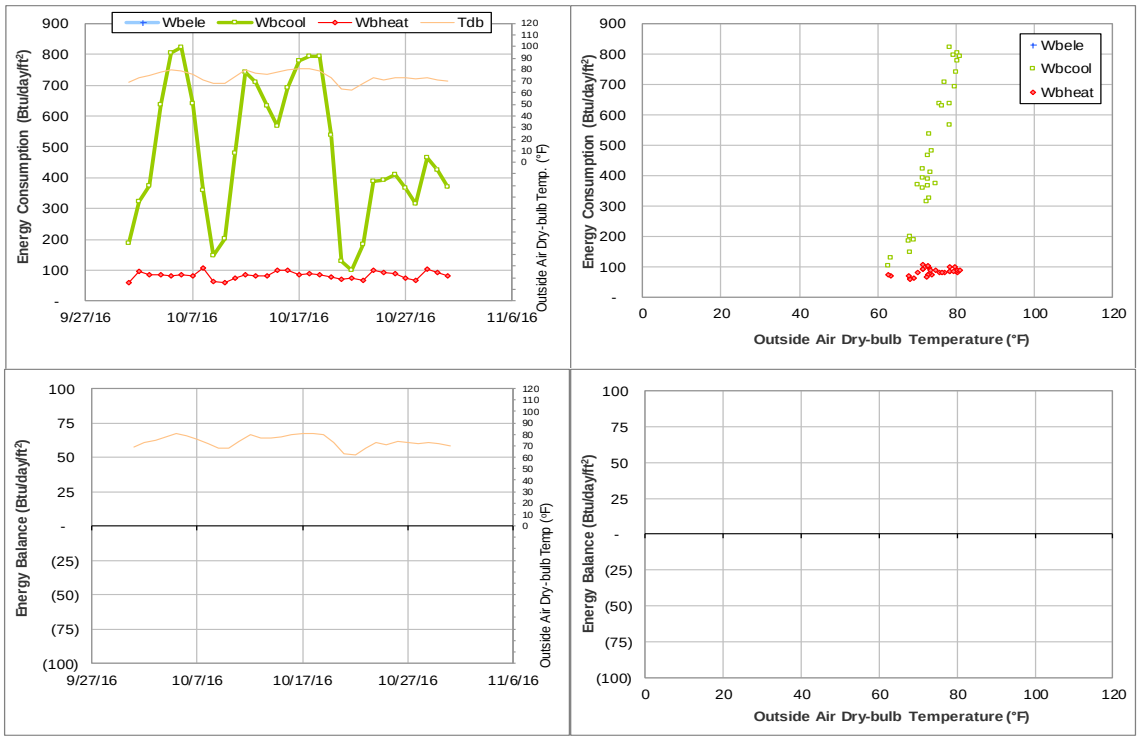


Figure IV-188 Office of the State Chemist Building TAMU BLDG # 1810 Energy Balance Plot during October 2016

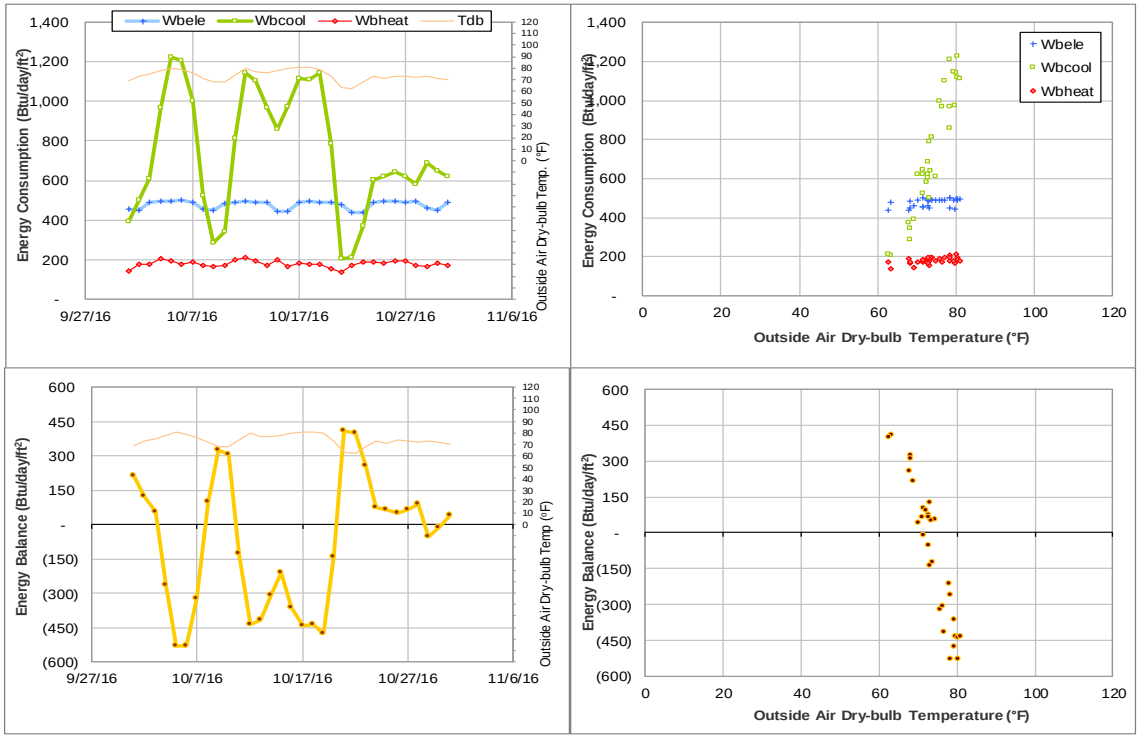


Figure IV-189 Vet Med Research Bldg Addition TAMU BLDG # 1811 Energy Balance Plot during October 2016

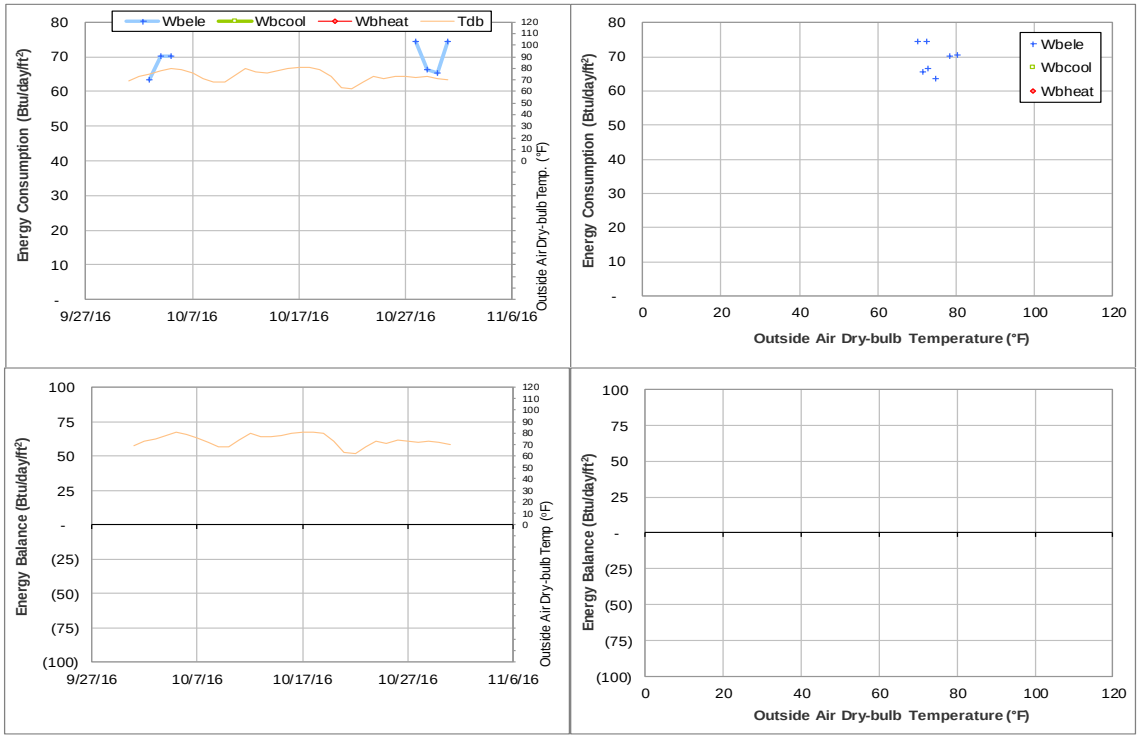


Figure IV-190 Veterinary Medicine Building 1, 2, and 3 TAMU BLDG # 1812 Energy Balance Plot during October 2016

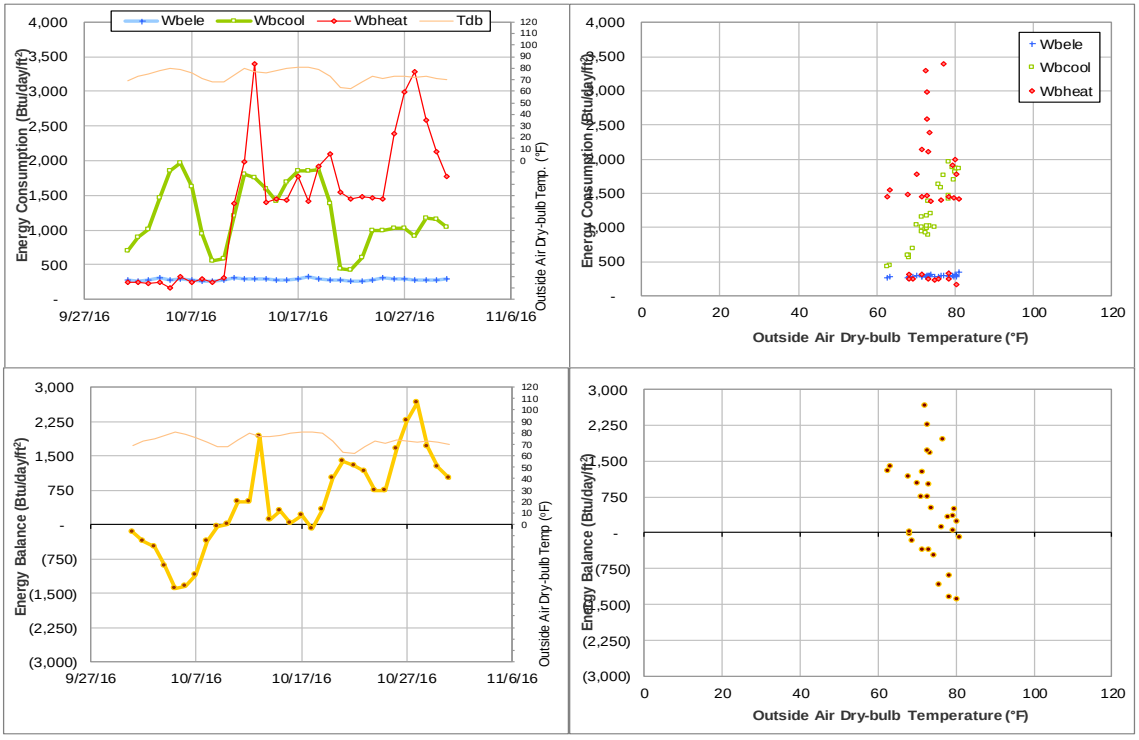


Figure IV-191 Texas Institute for Genomic Medicine TAMU BLDG # 1900 Energy Balance Plot during October 2016

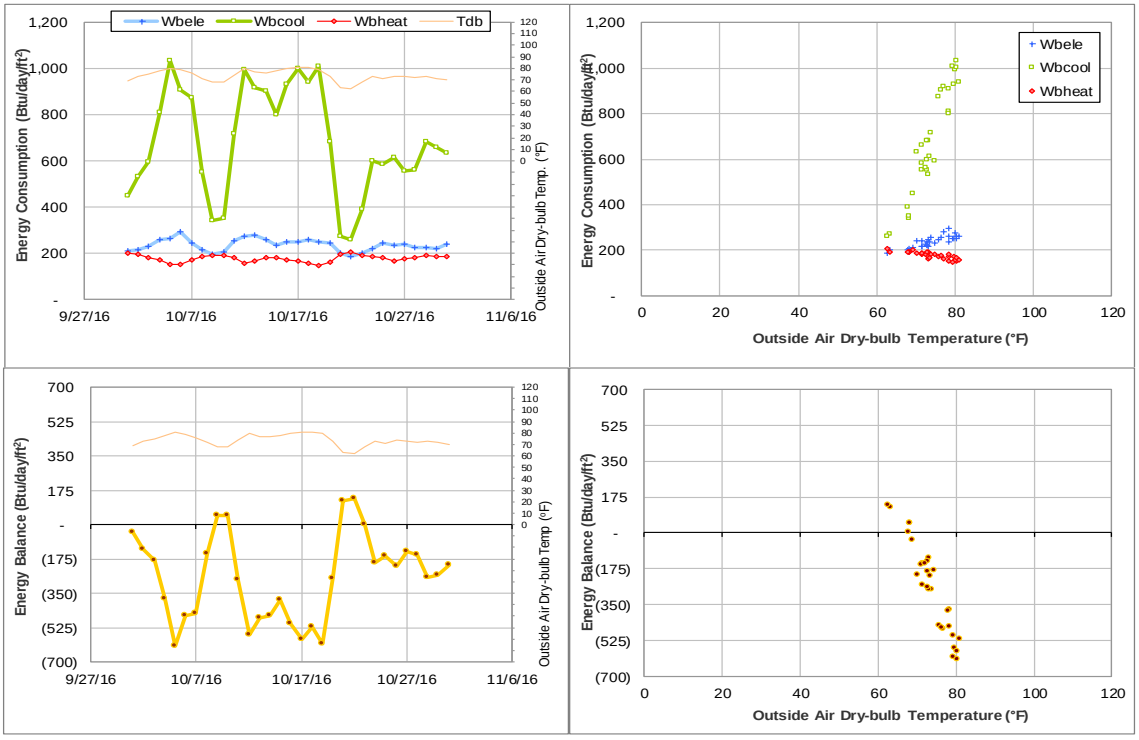


Figure IV-192 Texas A&M Institute for Preclinical Studies A TAMU BLDG # 1904 Energy Balance Plot during October 2016

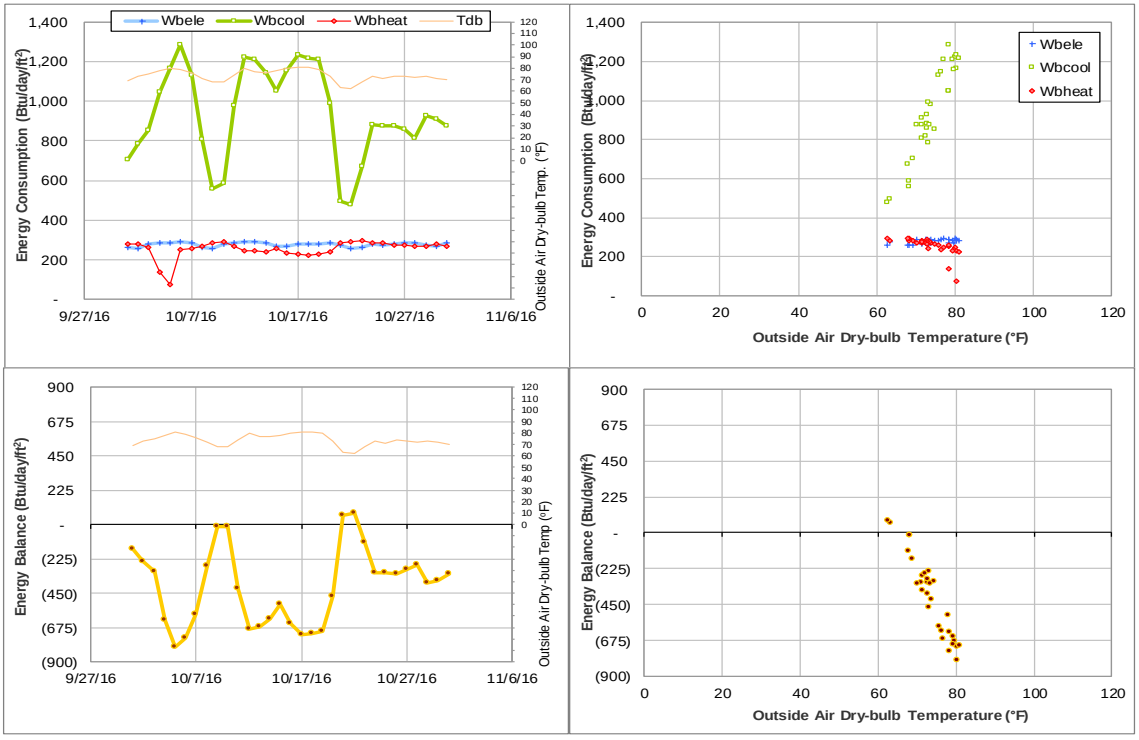


Figure IV-193 National Center for Therapeutics Manufacturing TAMU BLDG # 1910 Energy Balance Plot during October 2016

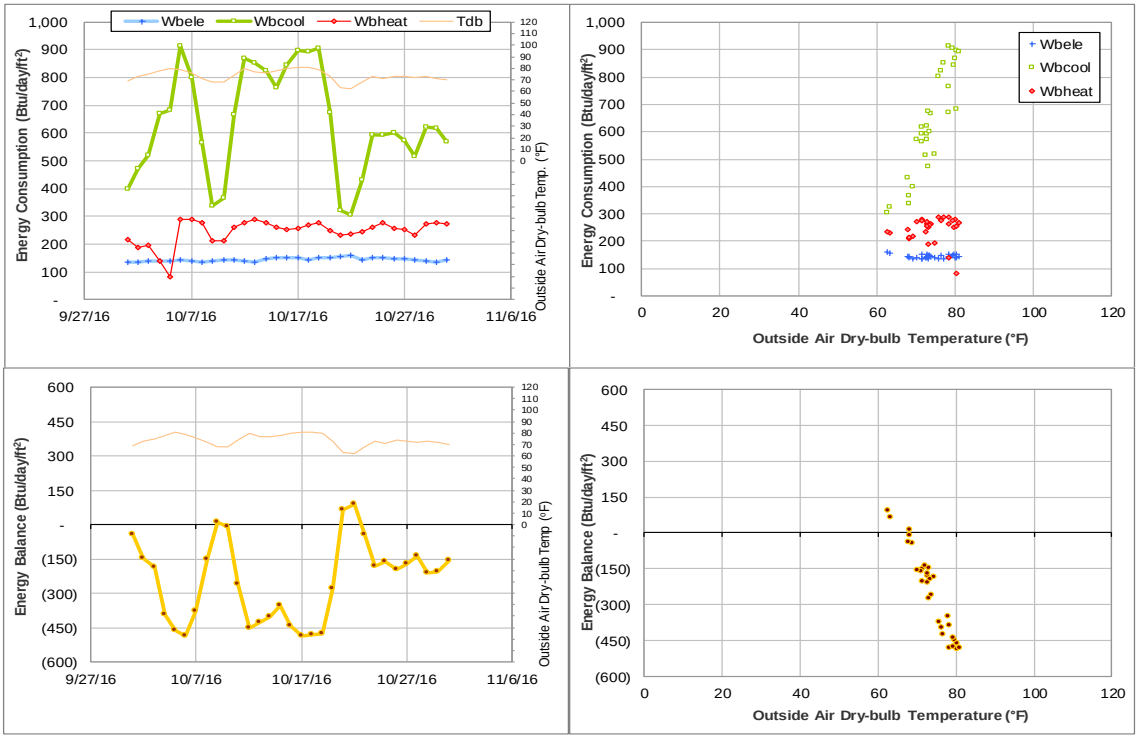


Figure IV-194 Multi-Species Research Building TAMU BLDG # 1911 Energy Balance Plot during October 2016

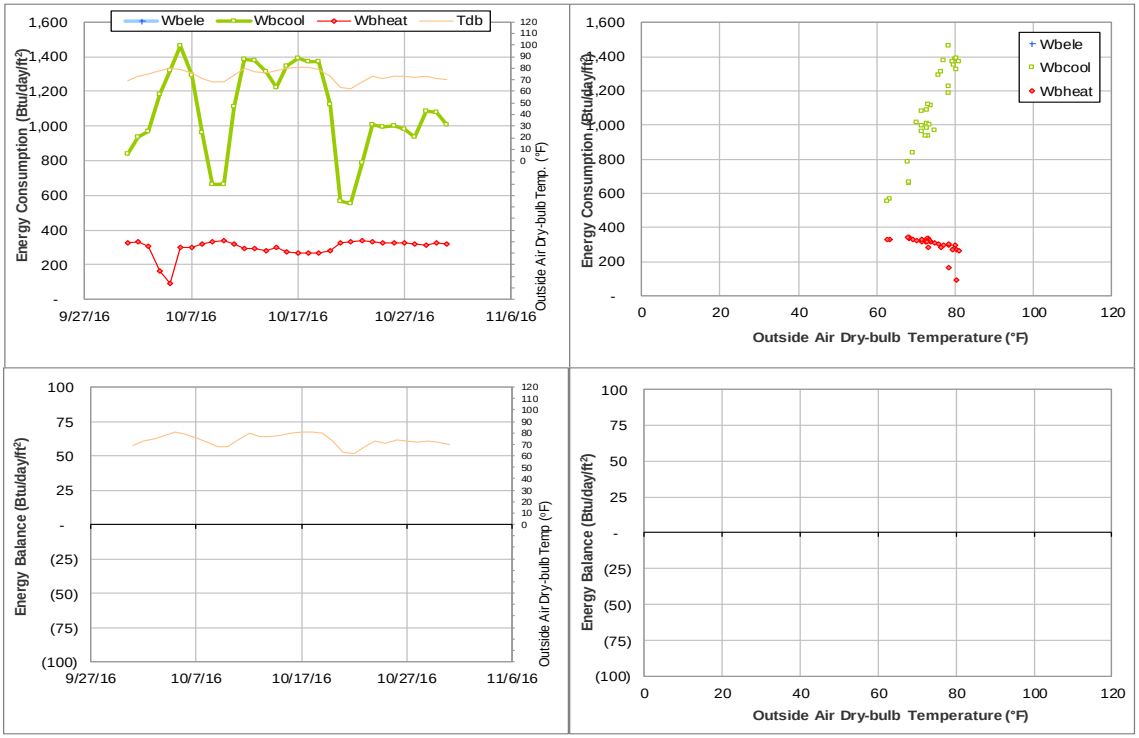


Figure IV-195 NCTM Manufacturing Building TAMU BLDG # 10226 Energy Balance Plot during October 2016

V. Energy Balance Plots with Filled-in data for October 2016 Consumption

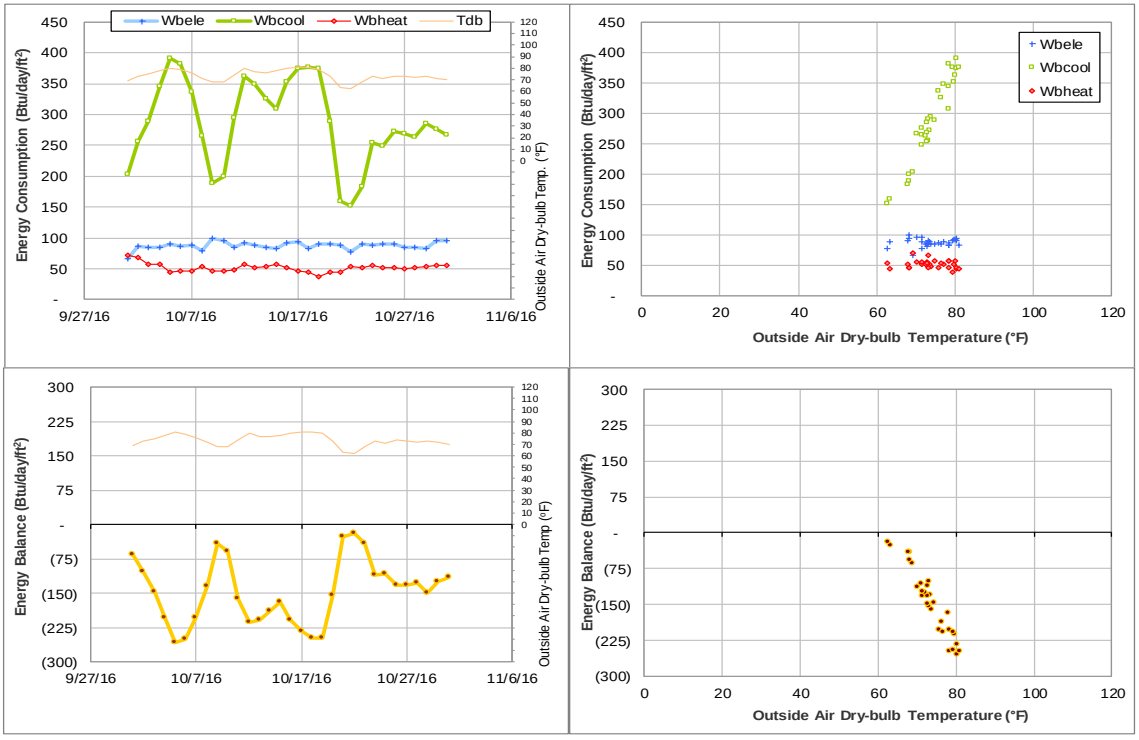


Figure V-1 Fountain Hall Dorm 4 TAMU BLDG # 403 Energy Balance Plot during October 2016

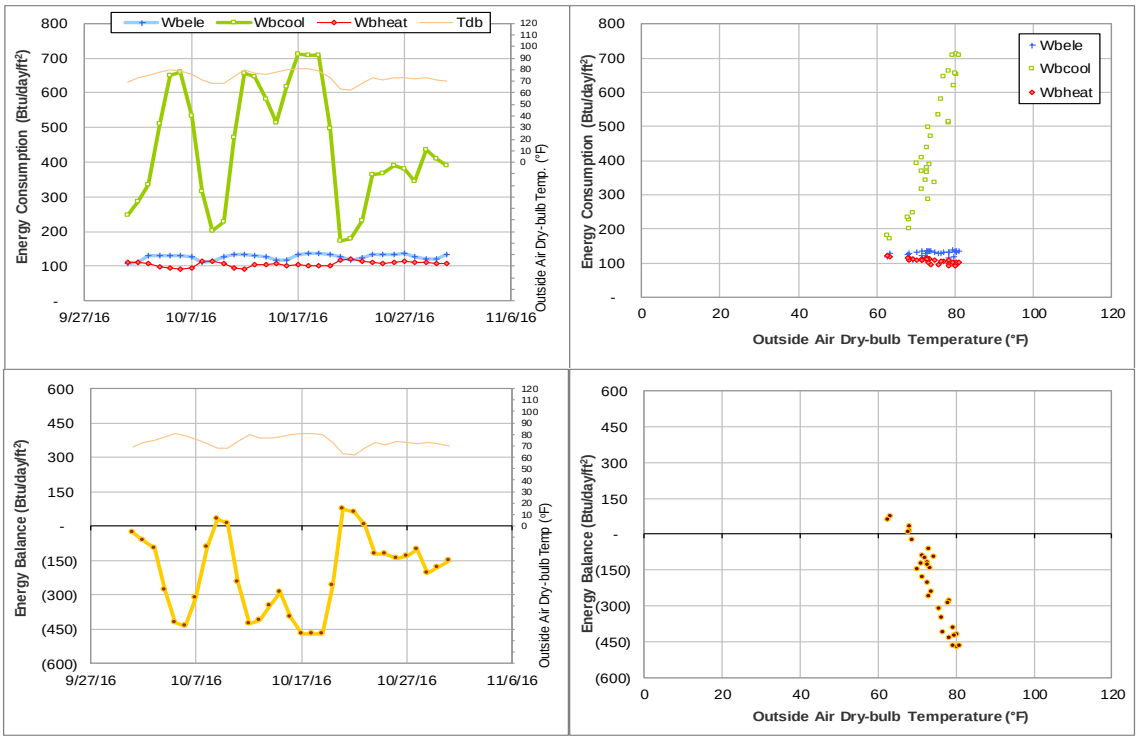


Figure V-2 Reed-McDonald and Engineering Innovation Center TAMU BLDG # 436 Energy Balance Plot during October 2016

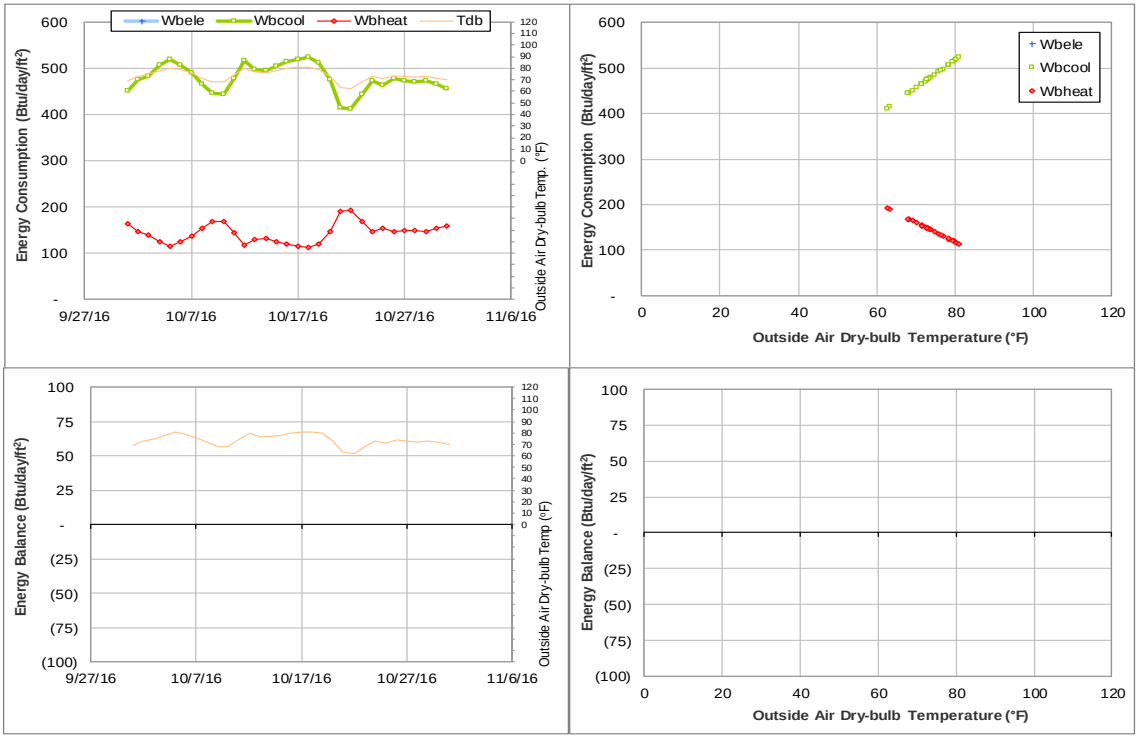


Figure V-3 Military Sciences Building TAMU BLDG # 456 Energy Balance Plot during October 2016

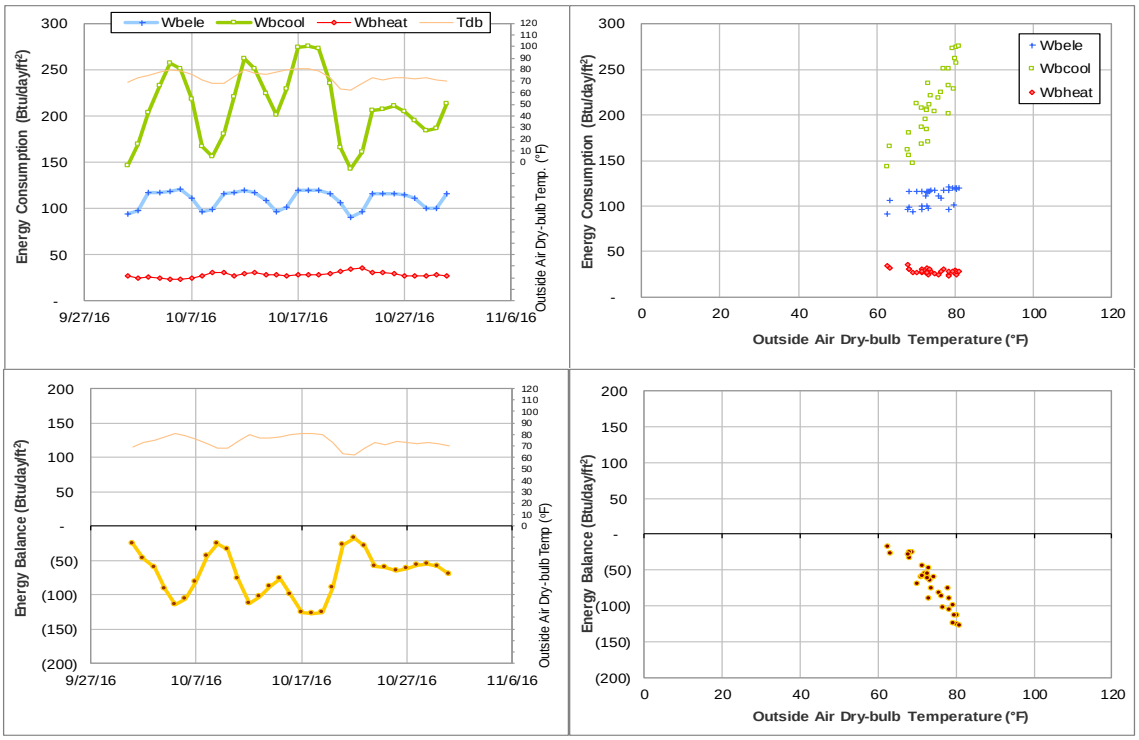


Figure V-4 Evans Library TAMU BLDG # 468 Energy Balance Plot during October 2016

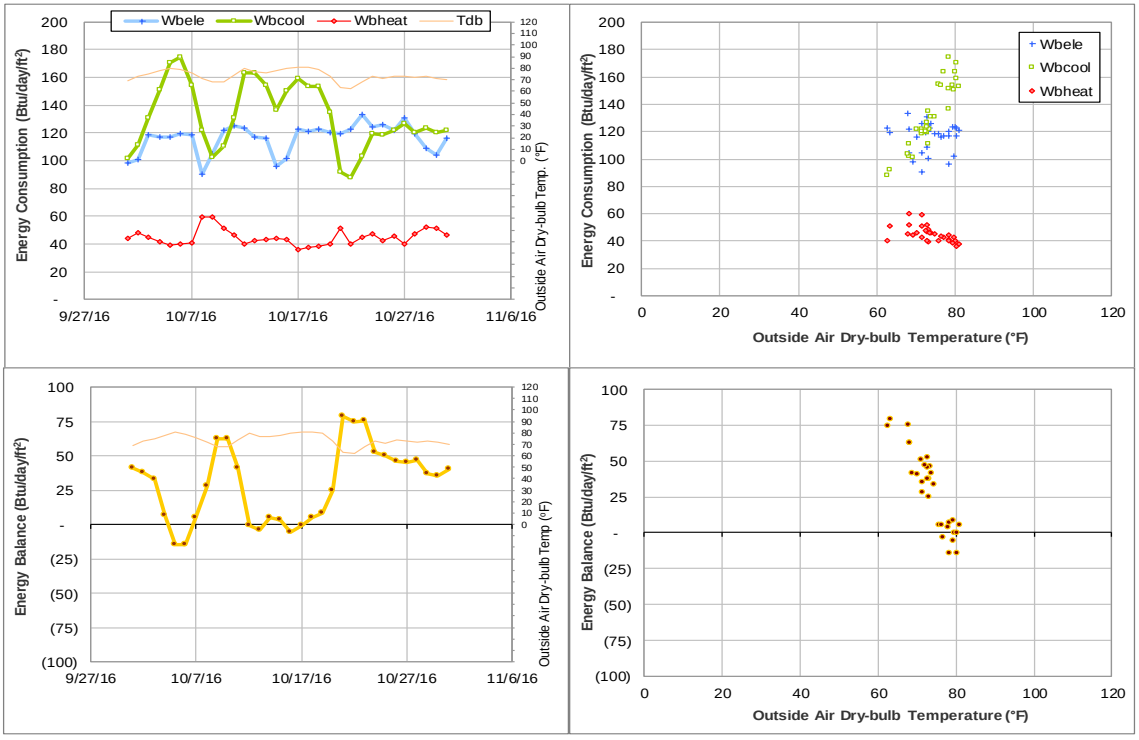


Figure V-5 Engineering Innovation Center TAMU BLDG # 499 Energy Balance Plot during October 2016

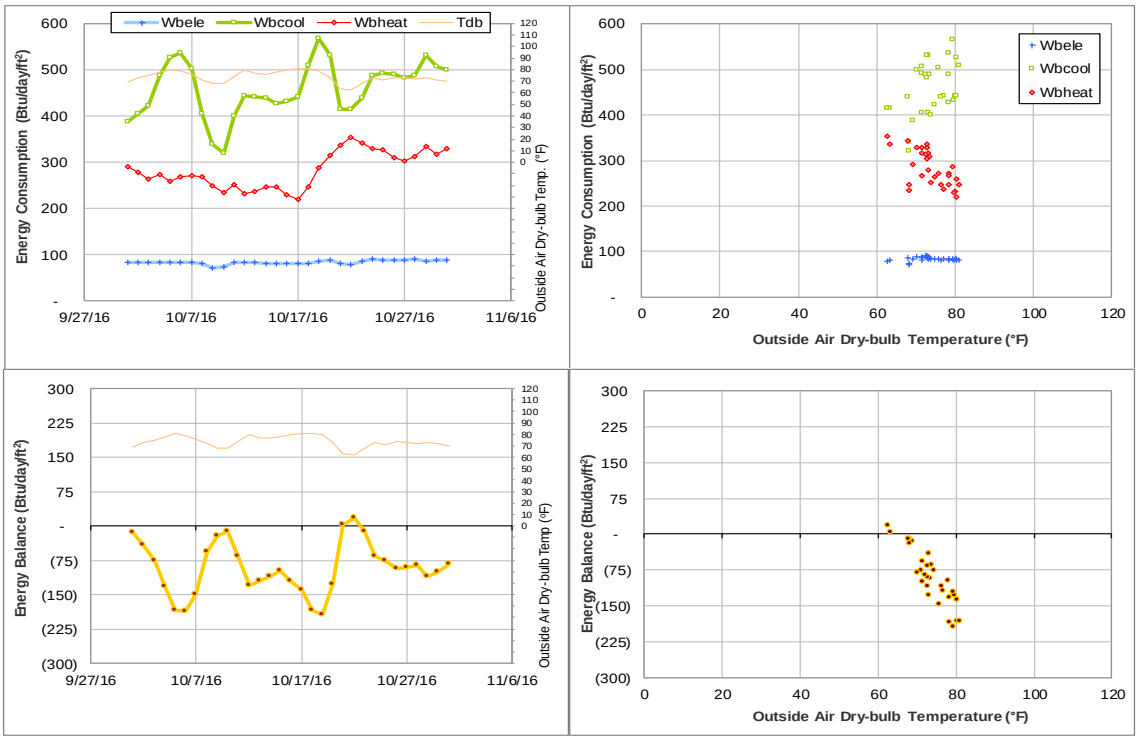


Figure V-6 Haas Residence Hall TAMU BLDG # 549 Energy Balance Plot during October 2016

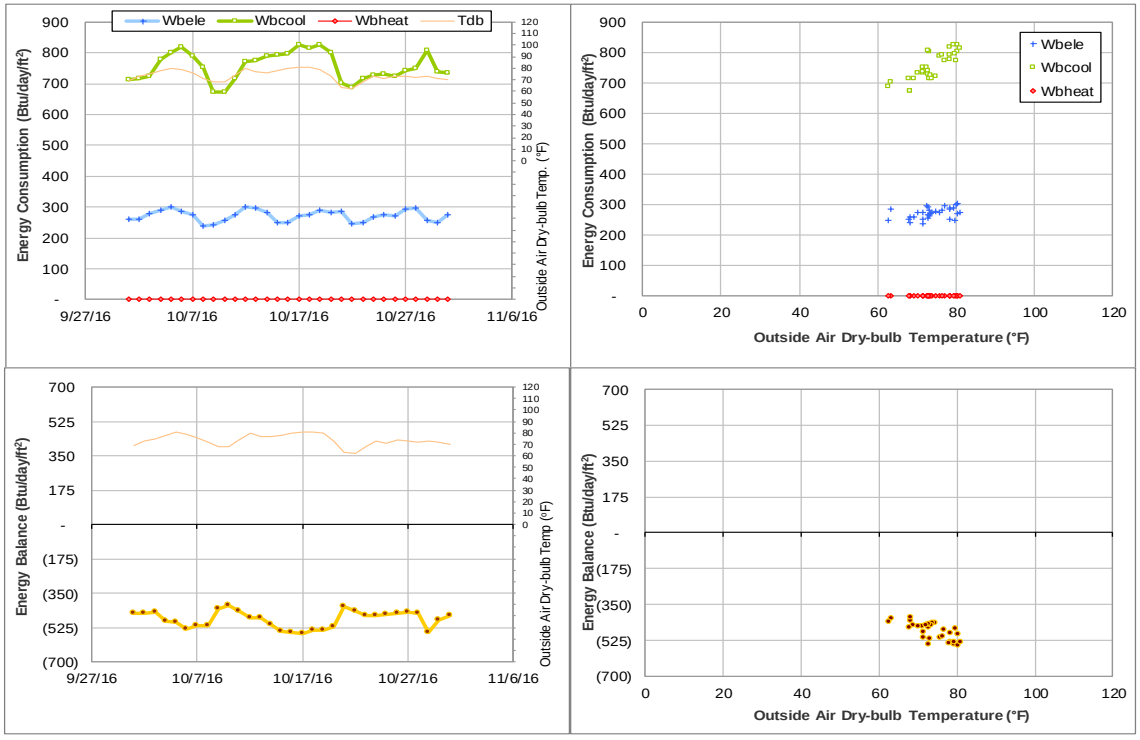


Figure V-7 McNew Laboratory TAMU BLDG # 740 Energy Balance Plot during October 2016

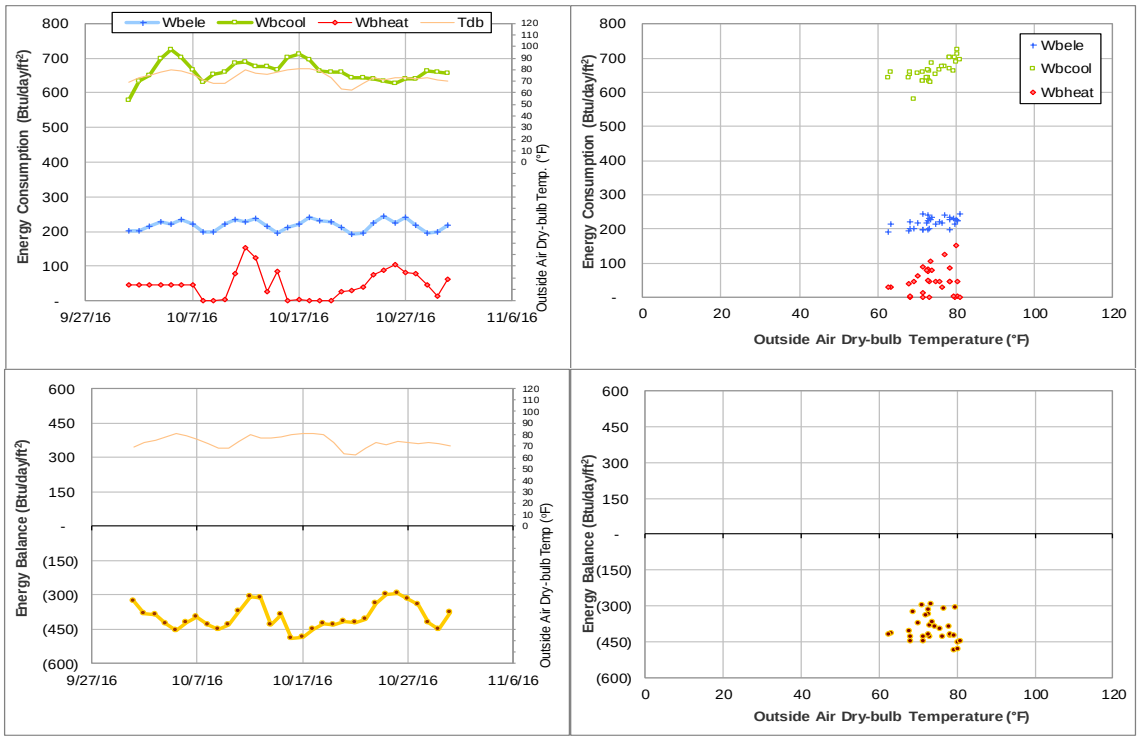


Figure V-8 Vivarium III TAMU BLDG # 1020 Energy Balance Plot during October 2016

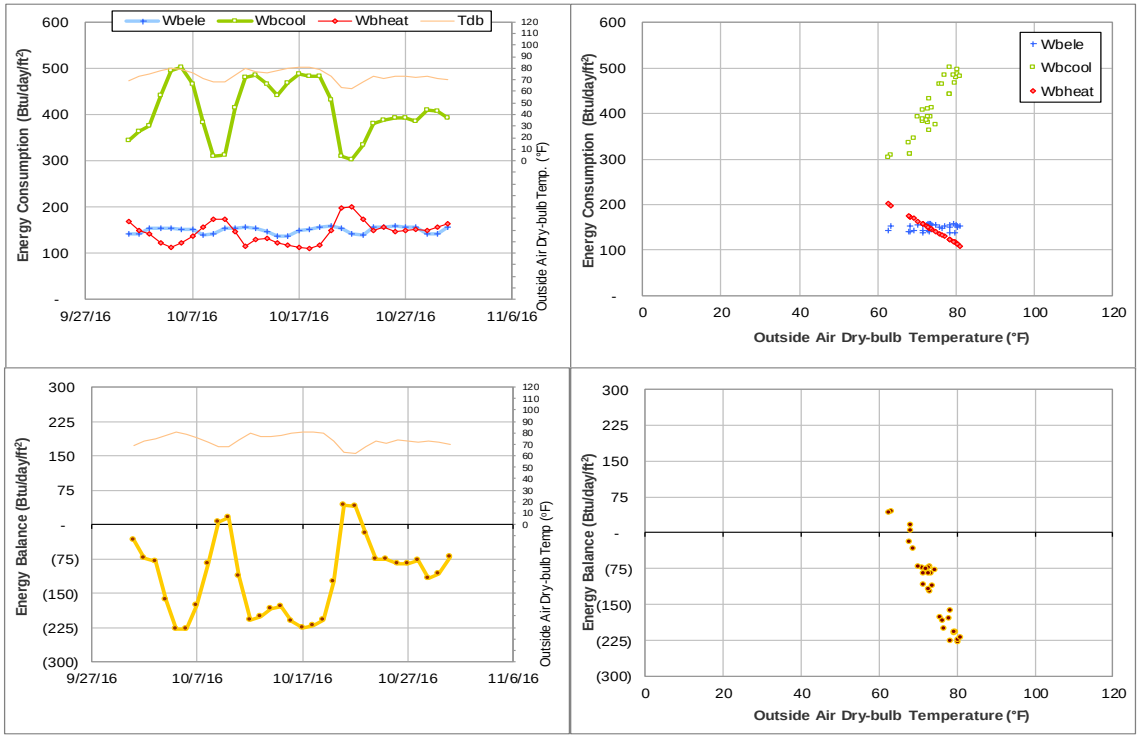


Figure V-9 Veterinary Medicine Administration TAMU BLDG # 1026 Energy Balance Plot during October 2016

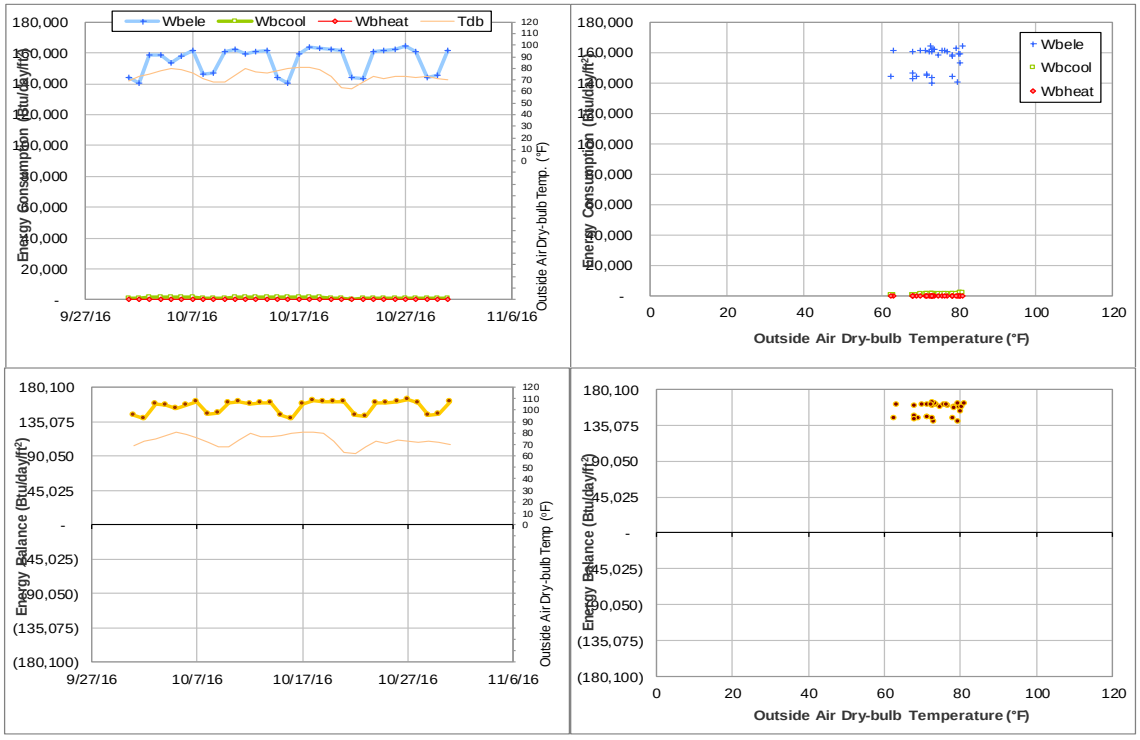


Figure V-10 Texas Vet Med Diagnostic Lab TAMU BLDG # 1041 Energy Balance Plot during October 2016

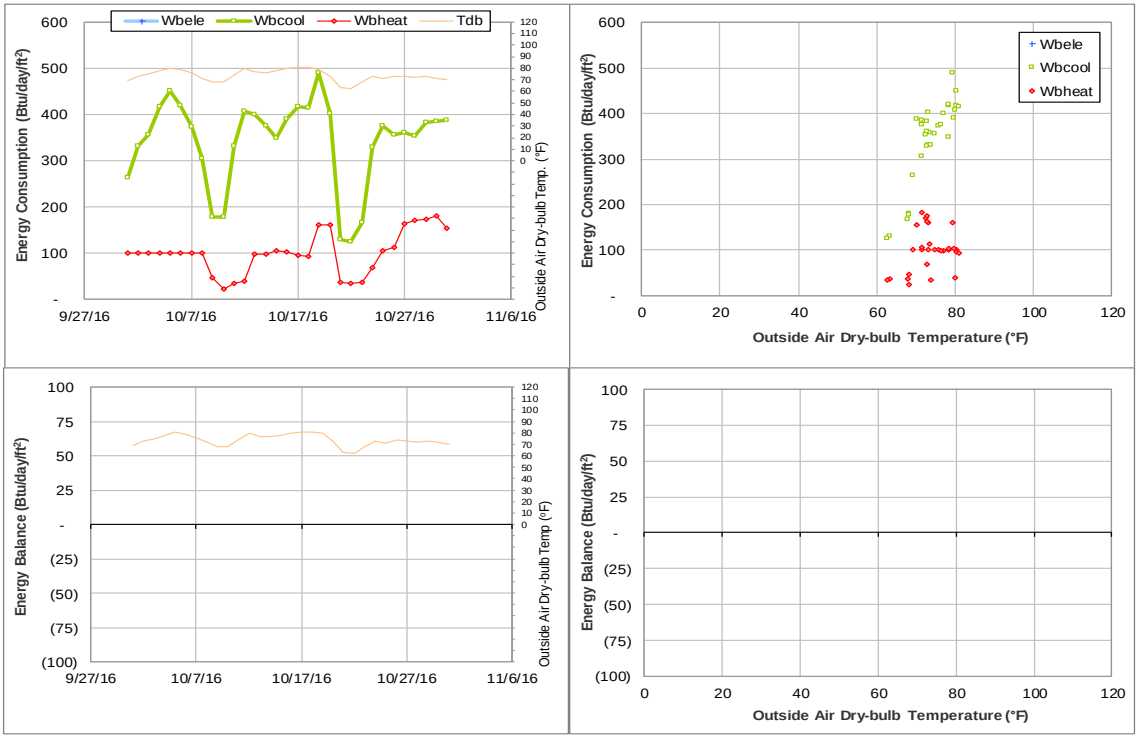


Figure V-11 Plank LLC TAMU BLDG # 1404 Energy Balance Plot during October 2016

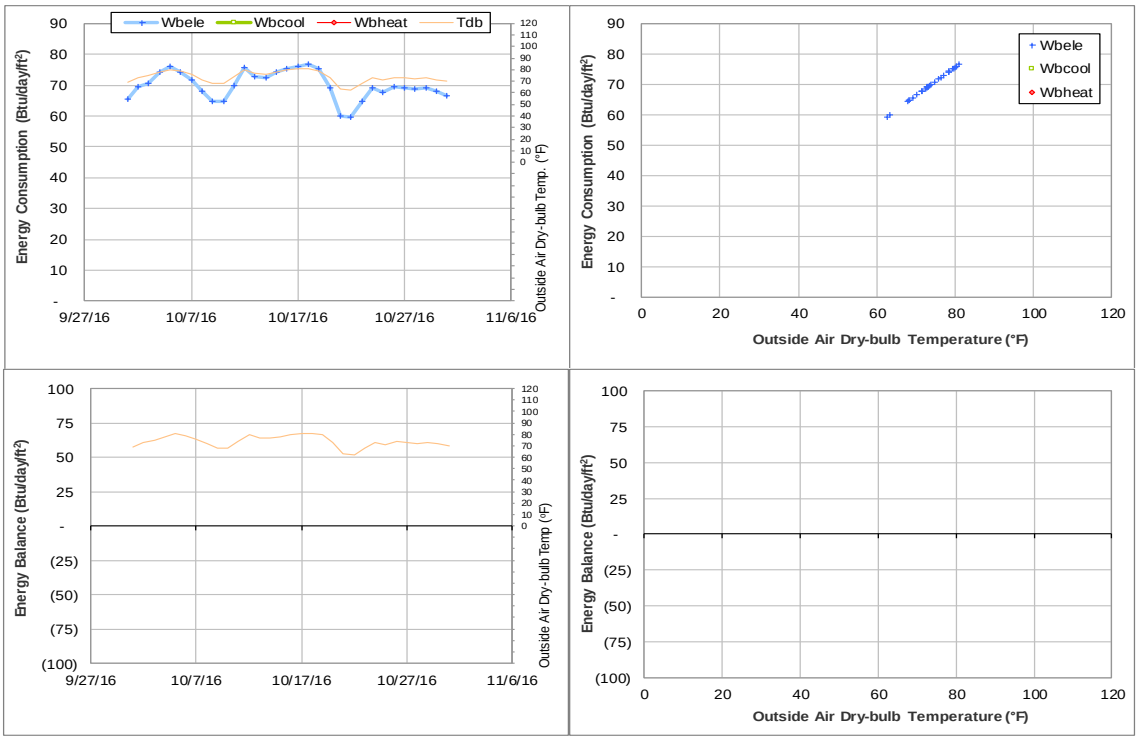


Figure V-12 University Apartments - The Gardens F TAMU BLDG # 1454 Energy Balance Plot during October 2016

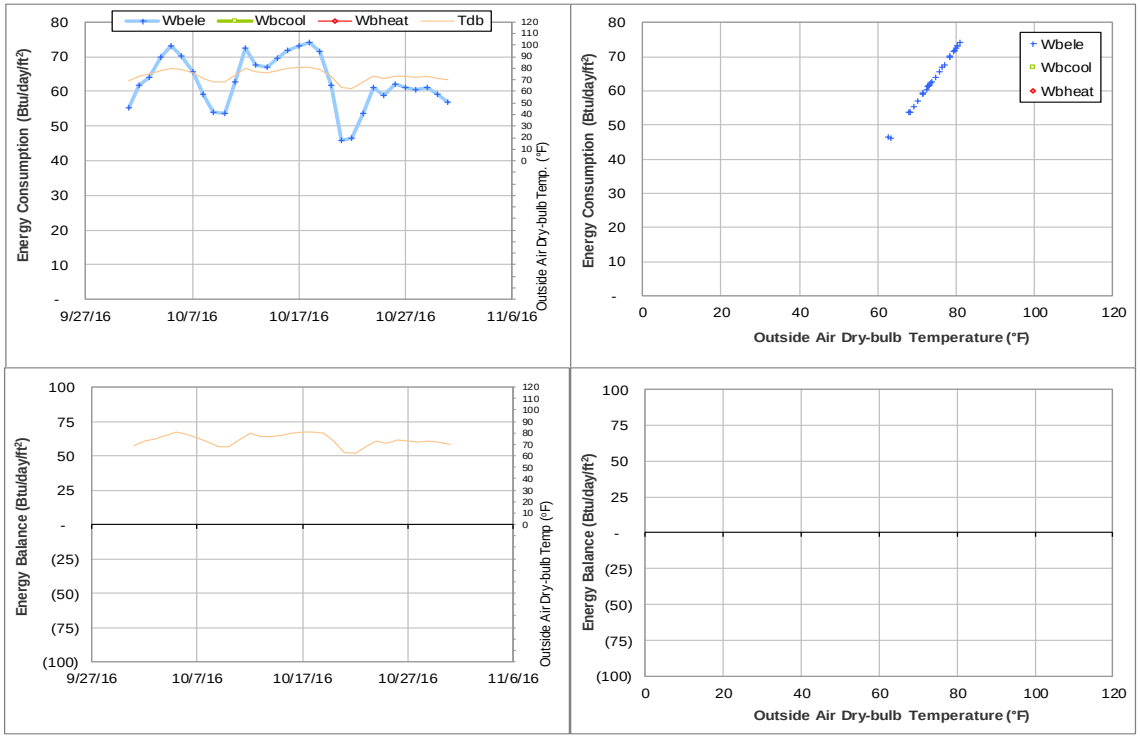


Figure V-13 University Apartments - The Gardens G TAMU BLDG # 1455 Energy Balance Plot during October 2016

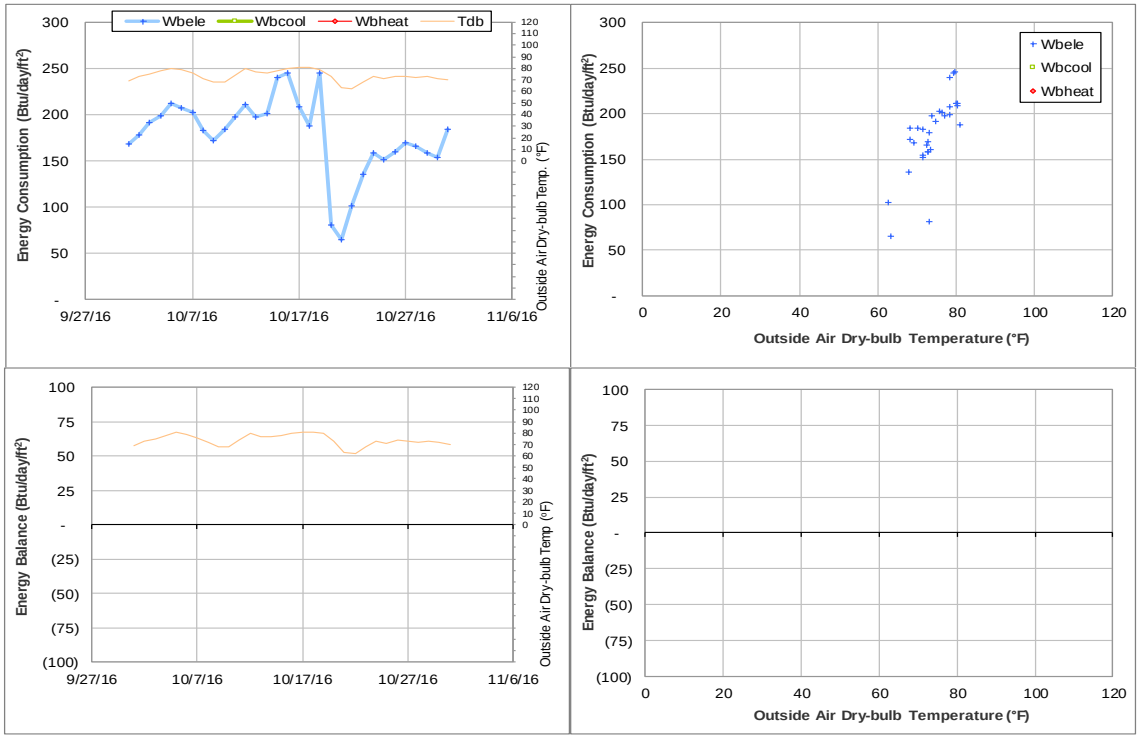


Figure V-14 Southern Crop Improvement Greenhouse TAMU BLDG # 1512 Energy Balance Plot during October 2016

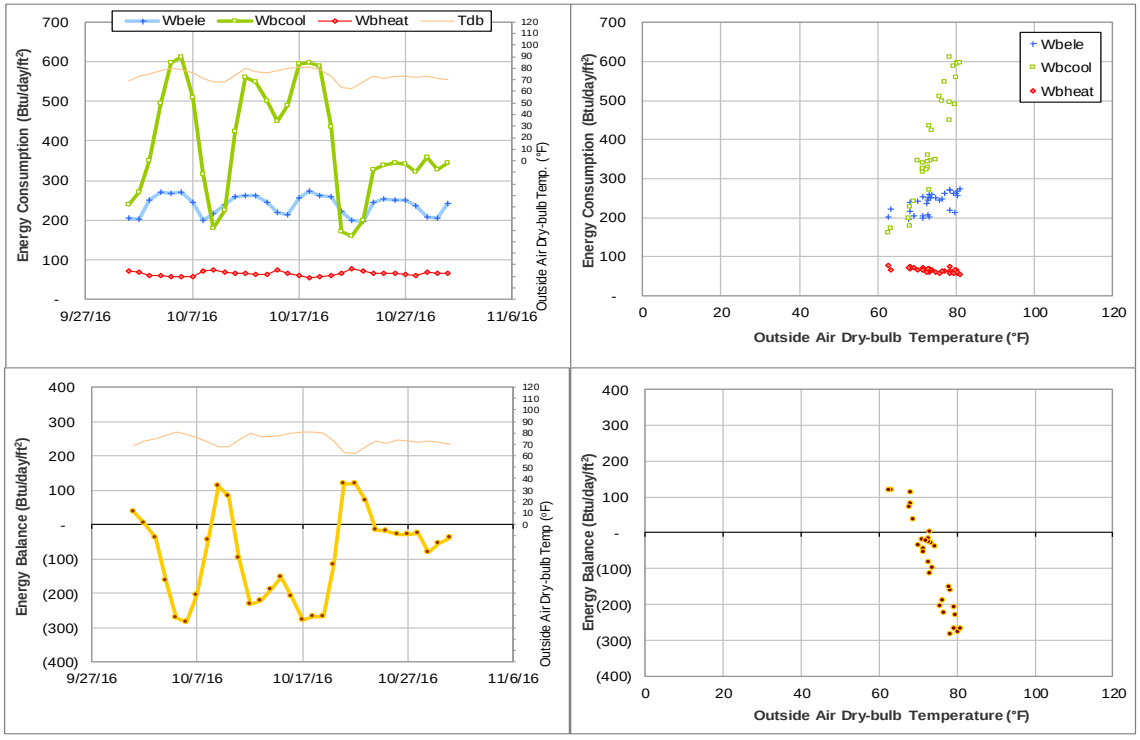


Figure V-15 TX School of Rural Public Health TAMU BLDG # 1518 Energy Balance Plot during October 2016

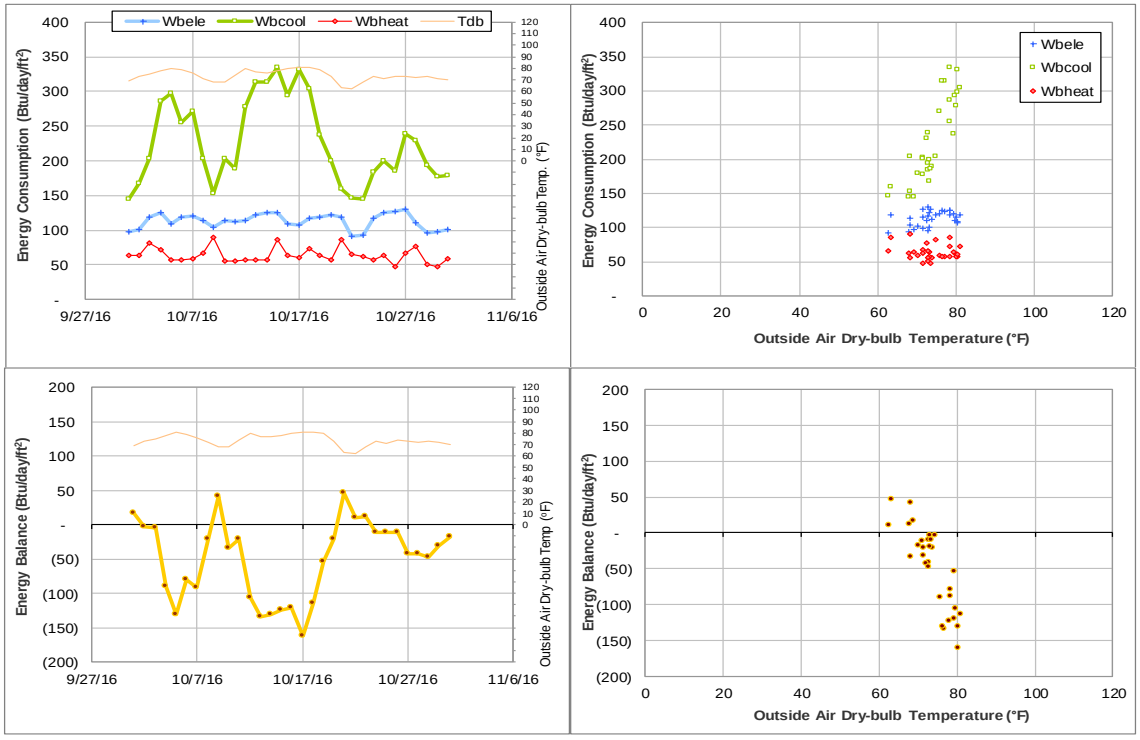


Figure V-16 Reed Arena and Cox-McFerrin Center TAMU BLDG # 1554 Energy Balance Plot during October 2016

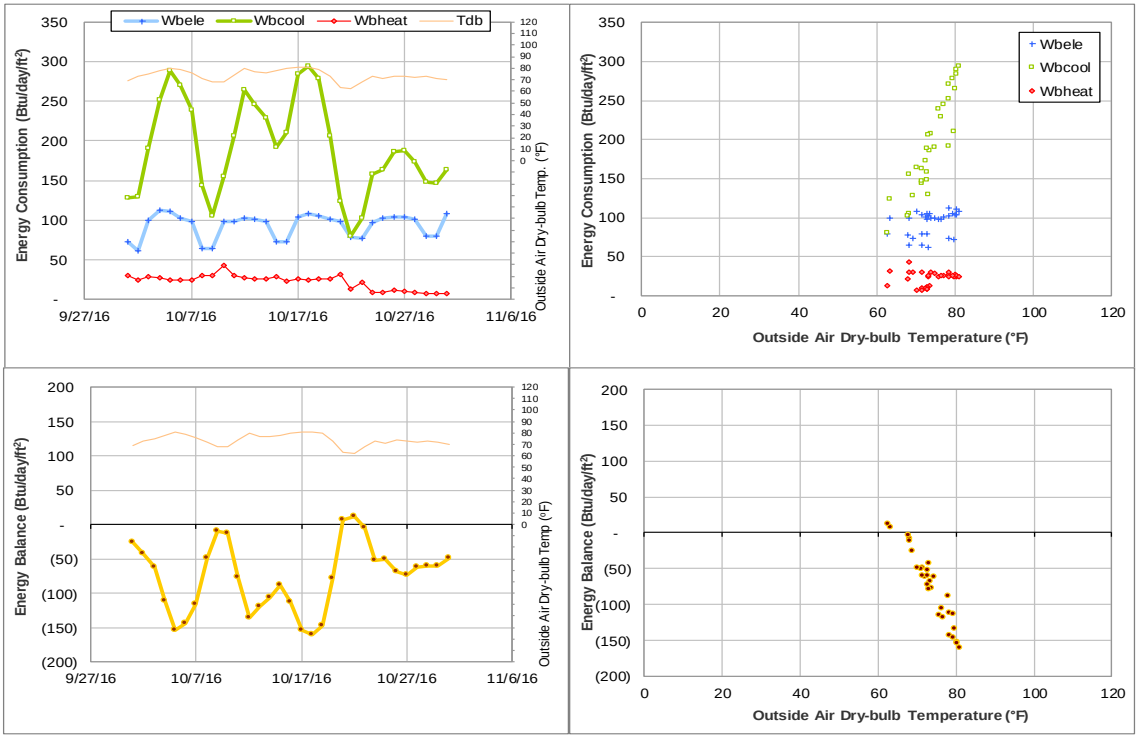


Figure V-17 Gilchrist TTI Building TAMU BLDG # 1600 Energy Balance Plot during October 2016

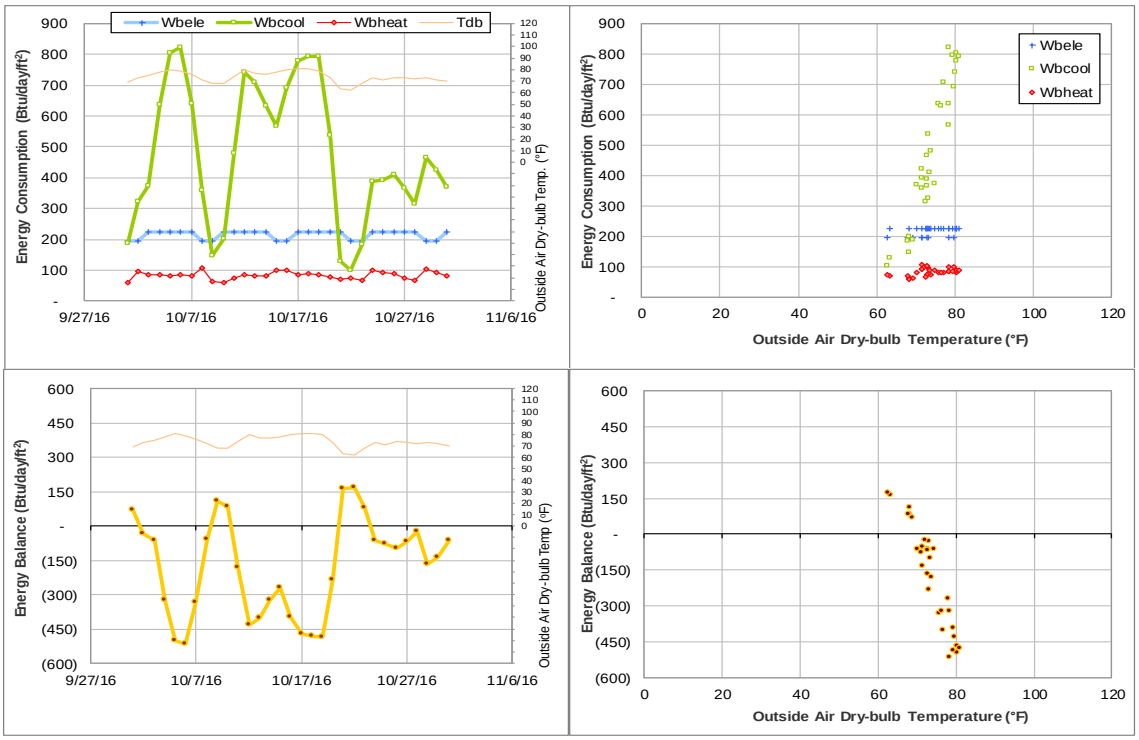


Figure V-18 Office of the State Chemist Building TAMU BLDG # 1810 Energy Balance Plot during October 2016

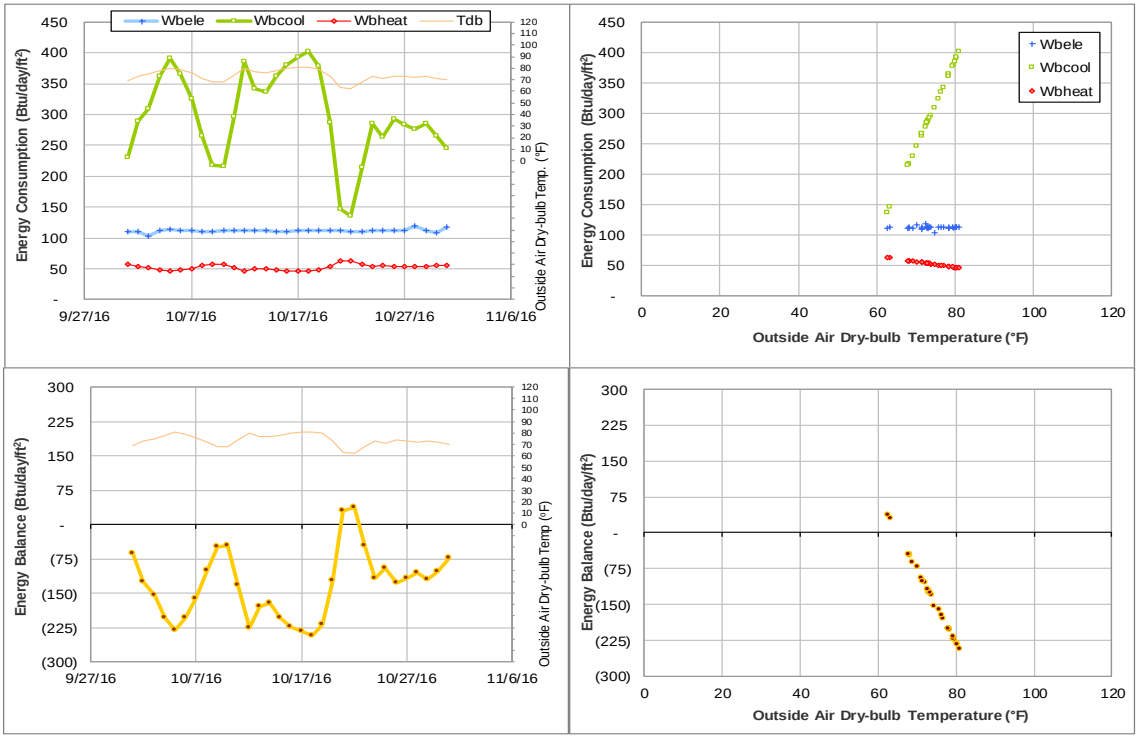


Figure V-19 Veterinary Medicine Building 1, 2, and 3 TAMU BLDG # 1812 Energy Balance Plot during October 2016

VI. Appendix

ENERGY ANALYSIS GROUP

ENERGY SYSTEMS LABORATORY
TEXAS A&M ENGINEERING EXPERIMENT STATION

Project: TAMU: Energy Analysis*

Report: Energy Consumption Data Quality Assurance/Quality Control Assessment Report for the Month of October 2016

Prepared for:

Utility & Energy Services

Division of Administration

Texas A&M University

Authors: Xiaoli Li, Kimberly Jones, Hongxiang Fu, Alaina Ruffin

Dr. Juan-Carlos Baltazar, and Dr. David Claridge

Date: November 2016

* For information on TAMU project please contact the Team Manager Dr. Juan-Carlos Baltazar